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# THE FESTIVUS

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Meeting date: third Thursday, 7:30 PM,  
Room 104, Casa Del Prado, Balboa Park, San Diego

## PROGRAM

### The Atlantidae - a Poorly-Known Group

Dr. Roger Seapy of California State University,  
Fullerton, will give a program on the very poorly-known and

beautiful group of pelagic gastropods, the Atlantidae with  
images of these tiny, unique creatures from the deep ocean.

Meeting date: January 20, 2000  
Shells of the month: pelagic gastropods

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## CLUB NEWS

### Minutes of the San Diego Shell Club Meeting - November 18, 1999

Secretary Kim Hutsell opened the meeting at 7:30 p.m. by welcoming everyone. He presented the slate of officers and opened nominations from the floor. The slate for the year 2000 presented by the nominating committee was voted in unanimously: President, Mike Mason; Vice-president, Kim Hutsell; Recording Secretary, Silvana Vollero; Corresponding Secretary, Mark Scott; Treasurer, Linda Hutsell.

Carole Hertz announced the new Berry Supplement at \$15.00 per copy. Margaret Mulliner announced there were no new book requests for the library from the membership. George Kennedy asked how one goes about requesting a new book and will see Margaret. Jules Hertz announced the particulars for the Club Christmas party [see review this page]. Hugh Bradner announced the Southern California Unified Malacologists (SCUM) will meet the second Saturday of January the 9<sup>th</sup>, at Scripps. Larry Lovell of Scripps will be moving the mollusk collection after the first of the year and will be asking for volunteers to help.

Kim Hutsell introduced the speaker for the evening, Dr. Tom Deméré, curator of Paleontology at the San Diego Natural History Museum. He gave a wonderful, illustrated talk on field work on the San Diego Formation. Two to 3 million year old finds were uncovered behind the Electric building in Balboa Park, the sea cliffs by Pacific Beach and Tourmaline Surfing Beach to Crystal Pier. The best exposures are in the Pacific Beach area which is rich in fossils along with Mt. Soledad to Pacific Beach, with many spreading along the Rose Canyon fault. In addition to discussing other rich areas, he told that the taxonomy of these fossils have been worked on since Dall (1874) worked on the first Pliocene invertebrates from the San Diego Formation. He told the audience what to look for in a deposit of shell accumulation and how he is interested in the paleobiological reconstruction of the then living community based on the dead remains.

A mini-auction of shell books by our own auctioneer, Carole Hertz, followed the program. Members Kay Klaus and Margaret Mulliner were the happy winners of the sale. The meeting was adjourned at 8:45 to look at the fossil shell displays brought by Dr. Deméré and by Nancy and Bill Schneider. The wonderful refreshments were provided by the Chritchlows and Billee Gerrodette. The door prize was won by Linda Hutsell.

Kay Klaus (for Silvana Vollero)

### The Club Christmas Party

Each Club Christmas party always seems even better than the last. This one was truly special and the thirty-seven in attendance had a wonderful time.

Members and guests in their holiday attire enjoyed the social cocktail hour chatting with friends new and old; the room was lovely with presents under the tree; and the tables were decorated with Strombus shells donated by Don and Jean Pisor and filled with poinsettias by the Hutsells. Master of Ceremonies Jules Hertz welcomed the group with some very funny stories and after a delicious dinner, with table wine provided by the Club, he opened the more formal proceedings, again with hilarious yarns between the installation of officers and remarks by *The Festivus* editor, Carole Hertz and outgoing president Terry Arnold.

The highlight of the evening was a slide presentation by member and professional photographer, Richard Herrmann entitled "San Diego: Beauty in Every Direction." The images were outstanding and Richard's fine narrative enhanced them. It was appreciated by all. Following Richard's program, the traditional gift exchange was held with much excitement and laughter. And then the lovely centerpieces were raffled off to the holder of the winning number at each table. Members lingered to spend more time with each other and see all the shell gifts.

It was a great party.

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**Correction:** The editor regrets the error in Skoglund (1999, vol. 31(11): 115, col. 2, para. 1). It should read "Dr. Rosewater returned the shells to Mert Goldsmith with the name *Alexania floridana* (Pilsbry, 1945). Rosewater's (1976) paper on a survey of Panamá cites the species from both ends of the Panama Canal. He also cited the Goldsmith shells as being from the Golfo de California without specifying the species name or mentioning the collecting locality."



*SPONDYLUS LINGUAEFELIS* SOWERBY, 1847  
(BIVALVIA: SPONDYLIDAE) IN THE PANAMIC PROVINCE,  
WITH NOTES ON THE OCCURRENCE OF  
*SPONDYLUS NICOBARICUS* SCHREIBERS, 1793

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**Abstract:** *Spondylus linguaefelis* Sowerby, 1847, is reported for the first time on the continental shelf of the Panamic Province at Isla Jicarita, Golfo de Chiriquí, Panamá. It is also the first report of occurrences on several oceanic islands within the province. These islands include Islas Clarión, Socorro and Roca Partida in the Archipiélago Revillagigedo, México; Isla de Malpelo, Colombia; and Islas Salvador and Pinta in the Archipiélago Galápagos, Ecuador. Specimens previously reported from the Panamic Province as *Spondylus nicobaricus* Schreibers, 1793, are herein considered *S. linguaefelis*.

**Introduction**

The previously known distribution of *Spondylus linguaefelis* includes the Solomon Islands, Hawaii

(Plate I, Figure A), Philippines, and northwestern and northern Australia (Lamprell, 1987). Kaiser (1997) reported specimens from the LACM collections, figured herein, from the Galápagos as *Spondylus* sp. (Figure 1).

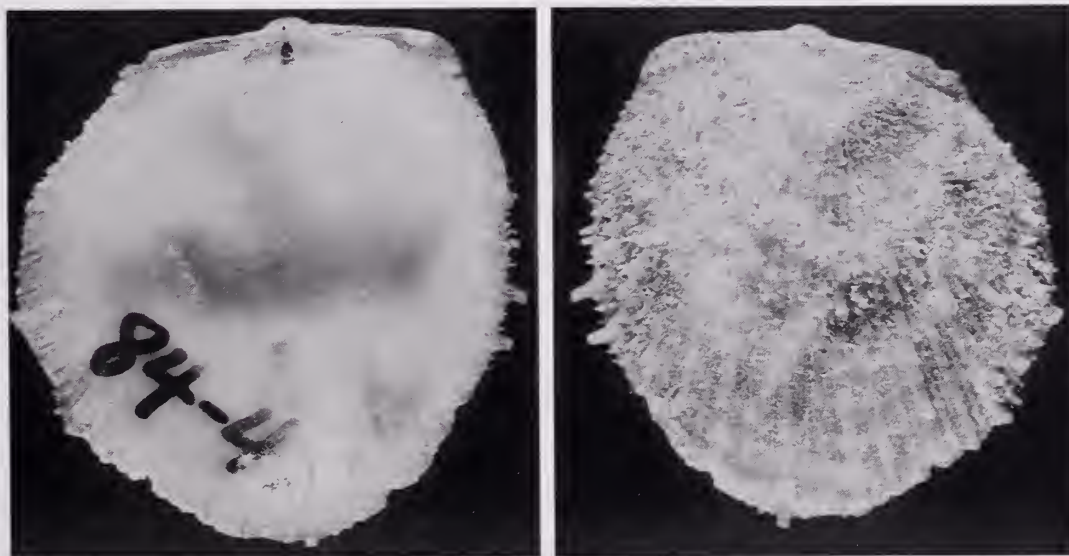


Figure 1. *Spondylus linguaefelis*, 14.6 x 14.0 mm, two views. LACM 84-41, S side of Isla Pinta, Islas Galápagos, 15-24 m. Photo: D. K. Mulliner.

<sup>1</sup>Mailing address: 3846 E. Highland Ave., Phoenix, AZ 85018, USA.

The color of *Spondylus linguaefelis* varies widely. A lot of three specimens taken at 55 m off Lahaina, Maui, Hawaii (SBMNH 345320) illustrates the color range of the species from Hawaii. One shell is all white, a second orange, and a third dark rose. All but one of the over 50 Panamic Province specimens seen by me are variations of the dark rose color.

Abbreviations used here are: HC, Jules and Carole M. Hertz Collection, San Diego, California; KC, Kirstie L. Kaiser Collection, Puerto Vallarta, México; LACM, Los Angeles County Museum of Natural History, Los Angeles, California; PC, Donald L. Pisor Collection, San Diego, California; SBMNH, Santa Barbara Museum of Natural History, Santa Barbara, California; h, height; w, width.

#### Description of Panamic Province Specimens Studied

*Spondylus linguaefelis* Sowerby, 1847.

Synonyms: *Spondylus gloriosus* Dall, Bartsch & Rehder, 1938; *S. minus* Dall, Bartsch & Rehder, 1938; *S. kauaiensis* Dall, Bartsch & Rehder, 1938.

*Spondylus linguaefelis* size, not including spines, h 27.7, w 23.1 mm to h 113.1, w 80.5 mm; shape variable with substrate. Exterior of numerous slender, needle-like spines on top valve; partly attached bottom valve with ruffling on some shells as well as needle-like spines. Exterior color dark rose with occasional blotches of yellow or orange on bottom valves of young specimens. Interior with teeth on bottom valve bifid on young shells, pronounced in small specimens, fading with growth and usually not apparent on larger shells. Inner margin with a broad color band matching exterior shell color, occasional specimens with a wide brown inner band. Hinge plate with some brown color.

#### Material studied

Panamic Province distribution of *Spondylus linguaefelis*:

##### Islas Revillagigedo, México

Isla Clarión: three specimens and one broken valve, h 58.1, w 35.1 to h 80.0, w 66.5 mm; depth: 15 to 20 m (KC).

Roca Partida: one specimen, h 101.4, w 83.1 mm; depth: 9 to 19 m (KC) (Figure 2).

Isla Socorro: one specimen, h 62.7, w 48.0 mm; depth: 10 to 11 m (KC). An additional

specimen taken by Donald R. Shasky at Isla Socorro (SBMNH 345413) is pink with white on early growth and later growth a dark rose color. Size: w 29.5 mm, h 34 mm.

This is the first report of the species in the Islas Revillagigedo, as well as the northernmost occurrence.

##### L'île Clipperton [France]

Twenty-two specimens from h 27.7, w 23.1 to h 113.1, w 80.5 mm; largest shell examined having both broad inner band and brown hinge plate; umbones yellow; depth: 9 to 27 m (KC). An additional specimen, h 68.5, w 62.4 mm, was taken from 10 to 20 m (HC) (Plate I, Figure B).

##### Isla del Coco, Costa Rica

Twenty-four specimens from seven localities around the island from h 36.0, w 32.8 mm to h 97.3, w 78.3 mm; depth: 20 to 80 m (KC) (Plate I, Figure C).

##### Isla Jicarita, Golfo de Chiriquí, Panamá

Single live collected specimen, h. 88.1, w 71.2 mm; depth 24 m (Figure 3). This is the first report of the species on the continental shelf of the Panamic Province. The shell is unusual in that the bifid teeth in the lower valve are still visible at this large size (KC).

##### Isla de Malpelo, Colombia

One specimen, h 77.2, w 70.8 mm; depth 15 to 26 m. (KC) (Figure 4). This is the first report of the species from Isla de Malpelo.

##### Islas Galápagos, Ecuador

Two valves, one from Isla San Salvador taken in 1938 in 66 to 73 m, h 17.1, w 18.1 mm (LACM 38-56) and one from Isla Pinta taken in 1984 in 15 to 24 m, h 14.6, w 14.0 mm (LACM 84-41) (Figure 1).

#### Discussion

*Spondylus linguaefelis* from the Panamic Province has previously been identified in collections and in the literature as *Spondylus nicobaricus* and as *Spondylus gloriosus*. *Spondylus gloriosus* was reported from L'île Clipperton [France] by Hertlein & Allison (1966) and Salvat & Ehrhardt (1970). Keen (1971) listed the species but did not figure it. Both Kay (1974) and





Figures 2, 3 *Spondylus linguaefelis* (2) 98.8 x 85.6 mm, Roca Partida, Islas Revillagigedo, 9-19 m, KC (3) 88.1 x 71.2 mm, Isla Jicarita, Golfo de Chiriquí, Panamá, KC. Photos: D. K. Mulliner.

Lamprell (1987) synonymized *S. gloriosus*, *S. minus* and *S. kuaiensis* with *S. linguaefelis*.

*Spondylus nicobaricus* was first reported from Isla del Coco by Shasky (1983). The 12 Shasky *Spondylus* lots from Isla del Coco now at the SBMNH were examined. Shasky's labels read *Spondylus nicobaricus*, but all are clearly *S. linguaefelis*. Two specimens in the Hertz Collection collected and identified by Shasky from Isla del Coco are also *S. linguaefelis*. Bernard, McKinnell & Jamieson (1991) also placed *S. nicobaricus* at Isla del Coco based on a personal communication from M. Montoya. I have not examined the Montoya material, but since Montoya, Kaiser and Shasky were on the same trips to Isla del Coco, I am assuming his specimens are also *S. linguaefelis*. The single shell in my collection from Isla del Coco taken by Gene Everson labeled as *S. nicobaricus* by Everson is also *S. linguaefelis*.

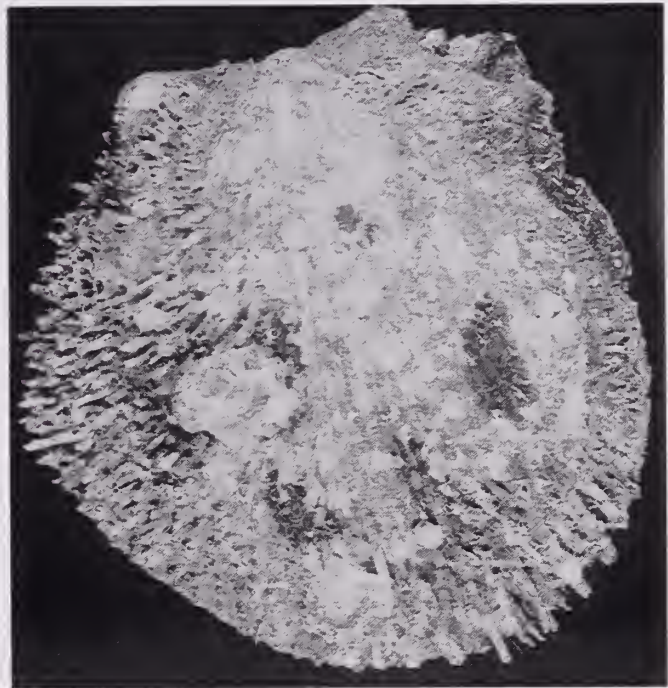


Figure 4. *Spondylus linguaefelis*, 77.2 x 70.8 mm, Isla de Malpelo, Colombia, (KC). Photo: D. K. Mulliner.

## Conclusion

*Spondylus nicobaricus* has sharply pointed ribs with striated interstices (Plate I, Figure D). The color is usually arranged in radiating rows of dark angular spots, upon a white ground (Sowerby, 1847). None of the shells from Isla del Coco examined by me has these characteristics and all fall well within the range of *S. linguaefelis*.

Since all the *Spondylus* seen by Kaiser on eight diving trips to Isla del Coco and those seen by me are the same species, I would, therefore, seriously doubt that *S. nicobaricus* is found at Isla del Coco and remove it from the list of species that occur there.

## Acknowledgments

Many people contributed to this paper. My sincere thanks to all of them. Kirstie L. Kaiser was the diver who found the specimens in Panamá and the offshore islands and brought the project to my attention. James H. McLean and Lindsey T. Groves (LACM), Jules and Carole M. Hertz, and Donald L. Pisor lent specimens. Henry W. Chaney made the material at SBMNH available for study. Paul Valentich Scott read the manuscript and offered many valuable suggestions. David K. Mulliner took the excellent photographs.

## Literature Cited

- BERNARD, FRANK R., S. M. MCKINNEL, G. S. JAMIESON  
1991. Distribution and zoogeography of the Bivalvia of the eastern Pacific Ocean. Canadian Special Publication of Fisheries and Aquatic Sciences 112:1-60: figs. 1-29.
- HERTLEIN, LEO GEORGE & EDWIN C. ALLISON  
1966. Additions to the molluscan fauna of Clipperton Island. The Veliger 9(2): 138-140.
- KAISER, KIRSTIE L.  
1997. The Recent molluscan marine fauna of the Islas Galápagos. The Festivus 29, Supplement, 67 pp.
- KAY, E. ALISON  
1979. Hawaiian Marine Shells. Reef and Shore Fauna of Hawaii, Section 4: Mollusca. Bishop Museum Special Publication 64(4): 654 pp, figs. 1-195.
- KEEN, A. MYRA  
1971. Sea Shells of Tropical West America: Marine Mollusks from Baja California to Peru. Stanford University Press, Stanford, Calif. i-xiv + 1064 pp., ca. 4000 figs., 22 color pls.
- LAMPRELL, KEVIN  
1987. *Spondylus* Spiny Oysters of the World. E. J. Brill, Pub. 84 pp, 30 pls.
- SALVAT, B. & J. P. EHRHARDT  
1970. Mollusques de L'île Clipperton. Bulletin du Muséum National D'Histoire Naturelle 2<sup>e</sup> série 42(1): 223-231.
- SHASKY, DONALD R.  
1983. New records of Indo-Pacific Mollusca from Cocos Island, Costa Rica. The Nautilus 97(4): 144-145.
- SOWERBY, G. B.  
1847. Monograph of the genera *Spondylus*, *Plicatula*, *Pedum*. Thesaurus Conchyliorum 1: 417-438 (reprint).



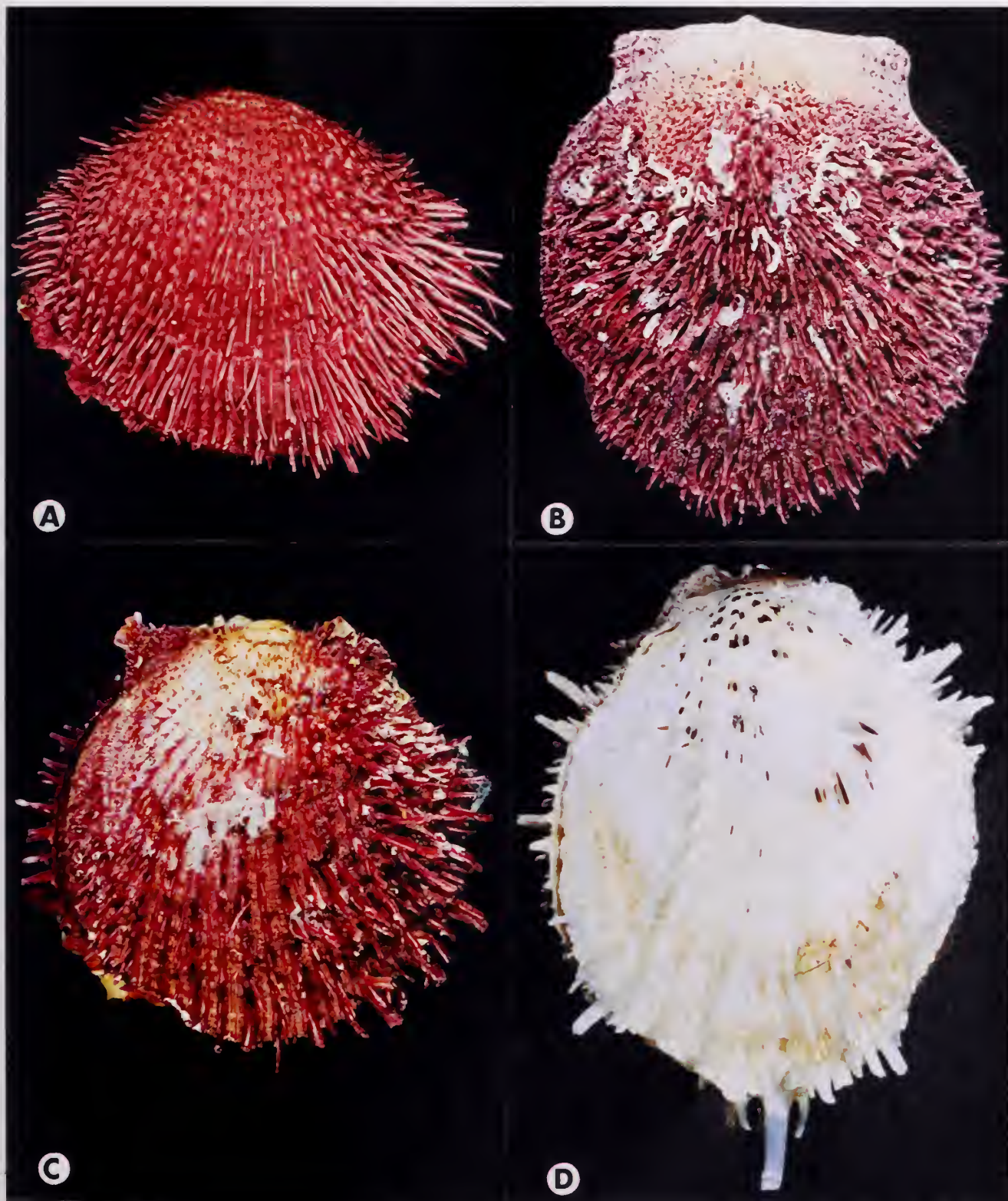


Plate 1, Figures A-C: *Spondylus linguaefelis*. (A) 73.9 X 76.2 mm, Lanai, Hawaiian Islands, on a pipe on a submarine at 73-79 m (240-260 ft), PC. (B) 68.5 x 62.4 mm, SW side L'île Clipperton, 10-20 m, HC. (C) 58.1 x 60.6 mm, E side of Isla Manuelita, Isla del Coco, KC. Plate 1, Figure D: *Spondylus nicobaricus*, 67.4 x 52.9 mm, Singapore, HC. Photos: D. K. Mulliner.





NEW DISTRIBUTIONAL RECORD FOR  
*FAVARTIA (MUREXIELLA) MILDREDAE* POORMAN, 1980  
(GASTROPODA: MURICIDAE)

BARBARA W. MYERS<sup>1</sup>

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Santa Barbara, California 93105-2936, USA

**Introduction**

The type locality of *Favartia (Murexiella) mildredae* Poorman, 1980, is 5 km south of Tetas de Cabras, near Bahía San Carlos, Sonora, México (Estero San Carlos by Poorman). Nine specimens were dredged from 100 m in October 1976. The holotype is in the Los Angeles County Museum of Natural History (LACM 1913, ex Shy Collection) and measures 19.7 x 10.8 mm. One paratype 18.4 x 9.5 mm is in the San Diego Natural History Museum (SDNHM 91454 formerly TS 511, ex Shy Collection) (Figure 1). Of the other paratypes, one is in the National Museum of Natural History, Smithsonian Institution (USNM 74901), one is in the Carol Skoglund Collection (ex Shy Collection) 3 are in the Santa Barbara Museum of Natural History (SBMNH 345414) (ex Poorman Collection) and two most likely remain in the Shy Collection. Additional material has been found in the collections of Donald R. Shasky of Oceanside, California, and Carol Skoglund of Phoenix, Arizona, which provide new distributional information for the species.

**Material examined**

Three specimens, maximum length: 17.6 mm, dredged 100 - 200 m, Chatham Bay, Isla del Coco, Costa Rica, May 1986, Shasky Collection (Figure 2).

1 specimen, 8.0 mm, dredged 70 - 80 m, SW side of Isla Manuelita, Isla del Coco, Costa Rica, March 1984 Shasky Collection (Figures 3, 4).

1 specimen, 18.0 mm, dredged 61-90 m, 3 mi S of Tetas de Cabras, Sonora, México, November 1981, Skoglund Collection.

2 specimens, both 129 mm, dredged 120-170 m, NW of Isla Smith, Bahía de los Angeles, Baja California,

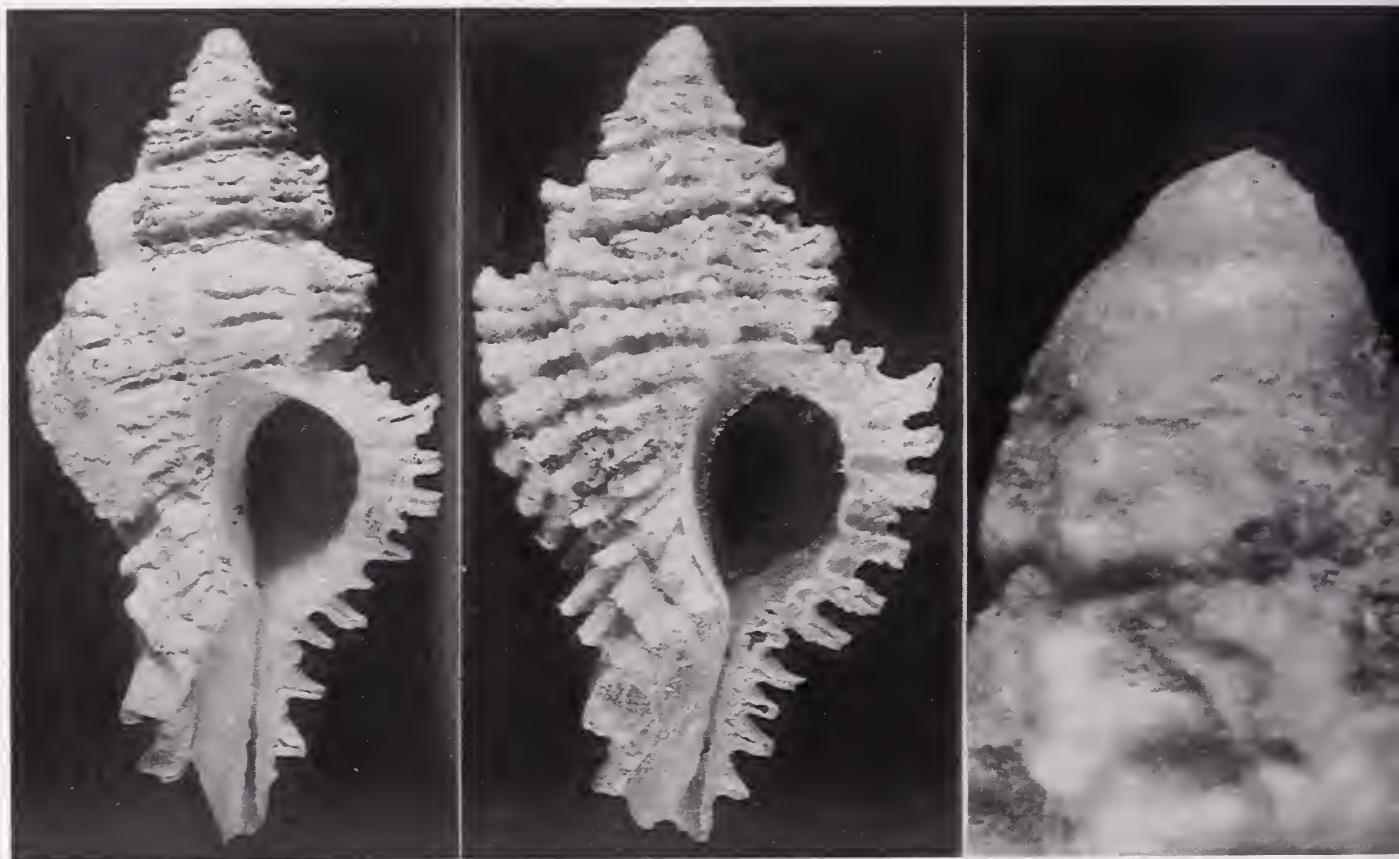


Figure 1. *Favartia (Murexiella) mildredae* Poorman, 1980, 18.4 mm, paratype, SDNHM 91454. Photo: D. K. Mulliner.

México, May 1991, C. Skoglund Collection.

1 paratype from type locality, 18.1 mm, C. Skoglund Collection, ex Shy Collection.

<sup>1</sup> 3761 Mt. Augustus Ave, San Diego, CA 92111, USA.



Figures 2-4. *F. (M.) mildredae*. (2) 17.4 mm, Shasky Collection. Dredged Bahía Chatham, Isla del Coco, Costa Rica. from 100 m. (3) 8.0 mm, Shasky Collection. Dredged from 70-80 m, SW side of Isla Manuelita, Isla del Coco. (4) Shasky Collection, same specimen as in Figure 3, showing closeup of the protoconch. Photos: D. K. Mulliner.

### Discussion

I identified four specimens in the Donald R. Shasky Collection from Isla del Coco, Costa Rica, as *F. (M.) mildredae* after comparing the specimens with the paratype in the San Diego Natural History Museum and figures and description of the holotype. The only other published record for this species is Bahía de los Angeles, Baja California, México, from 182 m (Skoglund, 1983).

Although Poorman described five varices for the holotype, I found the paratype and the Shasky specimens to have six. Also there is a moderate anal sulcus on the Shasky specimens and the paratype, in contrast to Poorman's statement "no apparent anal sulcus."

The discovery of these four specimens from Isla del Coco extends the known distribution of *F. (M.) mildredae* south more than 2000 km.

### Acknowledgments

I wish to thank Donald R. Shasky of Oceanside, California, and Carol Skoglund of Phoenix, Arizona, for allowing me to study their specimens of *Favartia (Murexiella) mildredae*. My thanks to the San Diego Natural History Museum for the loan of their paratype of *F. (M.) mildredae* and for other courtesies and Paul Scott, of the Santa Barbara Museum of Natural History, for paratype information. Further, my thanks to David K. Mulliner for the photographs of the specimens and Carole and Jules Hertz for helpful suggestions.

### Literature Cited

POORMAN, LEROY H.

1980. Two new molluscan species (Gastropoda: Muricidae) from the tropical eastern Pacific. *The Veliger* 22(4): 361-363, 1 pl.

SKOGLUND, CAROL

1983. Range extensions of Muricidae in the Gulf of California, Mexico. *The Festivus* 15(11): 107-108, 4 figs.



## BOOK NEWS

*Catalogue and Bibliography of the Marine Shell-Bearing Mollusca of Japan*

By Shun'ichi Higo, Paul Callomon and Yoshiro Goto  
1999. Elle Scientific Publications, Osaka, Japan.

A4 size, 749 pages.

Domestic agent: Odyssey Publishing, c/o John D. Jackson, 11558 Rolling Hills Drive, El Cajon, California 92020. Odyssey@adnc.com. \$130.00

The tradition of checklists on Japanese mollusks has spanned the 20<sup>th</sup> Century. Of these the most notable date from the 1952 *Checklist and Bibliography of the Recent Mollusca of Japan* by Tokubei Kuroda and Tadashige Habe which appeared in English, followed by a more ambitious catalogue by Shun'ichi Higo in 1973 and, 20 years later, by *A Systematic List of Mollusca Shells from the Japanese Islands and the Adjacent Area* by Higo in collaboration with Yoshiro Goto. The scope of this 1993 work included freshwater and terrestrial mollusca and remains a useful reference to general malacology, despite the fact that the text is in Japanese.

The present work, produced in English, is a refinement on these earlier checklists. As the title indicates, the authors have restricted their coverage to marine, shell-bearing mollusks, thus excluding the nudibranchs and cephalopods. They have followed previously published taxonomic schemes and have clearly defined the geographic scope of their coverage to "the coastal waters of Japan and immediate adjacent sea areas not separated by any major feature such as a trench or island chain." The text is divided into an

informative introduction, a catalogue of species that contain over 6600 species-level taxa, a bibliography, two indices listing taxa both in Latin and Japanese, and a concluding section of distribution maps. This work is in fact the first of a projected two-volume opus, with the second installment to contain figures of each species.

Volume Two is slated to appear in 2002 (hopefully). However, even without Volume Two the present work is of great value to any student of marine malacology and is absolutely indispensable to Pacific specialists and serious collectors. The bibliography alone is worth the price as it is easily the most extensive ever published on Japanese literature and includes a review of all the Japanese serials. The catalogue contains references, not only to species, but to all the higher taxa as well. The Japanese vernacular names for each species are given in the Roman alphabet, a change from all previous works where these names appeared in kana. While there are minor errors and some curious bibliographic omissions, this by no means detracts from the overall value of this work, particularly given its complexity.

Sumptuously bound in cloth and leatherette, with slipcase, this work is a credit to its authors and is highly recommended.

Henry W. Chaney

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Note: This volume will be available in the Club library at the January meeting.

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FOURTH ANNUAL GATHERING  
SOUTHERN CALIFORNIA UNIFIED MALACOLOGISTS (SCUM)

Saturday January 15, 2000, Munk Seminar Room--10 AM  
Institute of Geophysics & Planetary Physics  
Scripps Institution of Oceanography, La Jolla, CA 92093  
Host: Hugh Bradner

SCUM is an informal association of professional, amateur, and student malacologists and paleontologists

in southern California who are active or interested in research on mollusks. The continuing purpose of the

Received on 01-19-2000

annual gathering is to facilitate contact and keep one another informed of research activities and opportunities. There are no dues, officers, or publications. Previous SCUM gatherings at San Diego State University (SCUM I, 1997), Natural History Museum of Los Angeles County (SCUM II, 1998), and National University, La Jolla (SCUM III, 1999) were highly successful events.

All persons interested in Recent and/or fossil mollusks are invited to attend. Presentations and discussions should be informal and briefly cover research interests. A slide projector and overhead projector will be available for those wishing to treat their work in more detail. Premeeting coffee and donuts will be provided.

For the lunch break, there are numerous restaurants and sandwich shops (especially the Cheese Shop) about a mile south of SIO off La Jolla Shores Dr.

Parking will be available for a \$3.00 fee (good incentive to car pool). Maps and detailed directions to the meeting place will be provided (maps are also available on the IGPP home-page: <http://igpp.ucsd.edu>)

Please contact SCUM IV meeting host Hugh Bradner privately for further information. Hope to see you there!

Hugh Bradner, 1867 Caminito Marzella, La Jolla, CA 92037. Tel.: (858) 459-7681; Fax: (858) 459-0657; E-mail: [hbradner@ucsd.edu](mailto:hbradner@ucsd.edu)

## CONCHOLOGISTS OF AMERICA GRANTS

CONCHOLOGISTS OF AMERICA (COA) is pleased to announce its year 2000 program of grants to support molluscan research. Grants of up to \$1,500 will be available to qualified persons undertaking field or laboratory research on recent or fossil mollusks. Awards are made only to citizens or permanent residents of the Americas or to students attending graduate school in the United States. Awards are not made to high school students, and rarely to college students.

Although proposals of up to \$1,500 will be entertained, grants rarely exceed \$1,000, due to the large number of qualified applicants. Partial funding is not unusual. For a list of previous grantees, see <<http://coa.acnatsci.org/conchnet/grantees.html>>.

THE DEADLINE FOR APPLICATIONS is February 1, 2000. This is a postmark deadline, not a receipt deadline.

INSTRUCTIONS FOR APPLICATION are at <<http://coa.acnatsci.org/conchnet/coagrant.html>> and are repeated below.

There is no official application form. Applications should not exceed six pages single spaced and should include the following items:

- 1) title of project;
- 2) summary of project, not to exceed 150 words;
- 3) body of the proposal including
  - a) background information necessary to understand the project and its significance;

b) materials and methods, and proposed plan of research;

c) itemized budget of estimated expenses;

d) references cited.

4) a one page biography or resume including address, phone number and other means of contacting the applicant. US citizens and residents should include their social security number.

STUDENT APPLICANTS should also submit a letter of recommendation from an academic or professional source. If funding is being requested from several sources, an overall budget for the project may be presented, with items and total amount requested from COA clearly indicated. Normal budget items include supplies, expendable equipment, and travel expenses. Grants will not cover salaries, overhead, permanent equipment, conferences or meeting costs.

Applications must be sent in TRIPLICATE via regular mail to:

Dr. Gary Rosenberg  
Director for Grants, COA  
Academy of Natural Sciences  
1900 Benjamin Franklin Parkway  
Philadelphia, PA 19103-1195 USA

[rosenberg@acnatsci.org](mailto:rosenberg@acnatsci.org)

Applications are judged by the COA Grants Committee. Awards will be announced by April 30th.





# THE FESTIVUS

A publication of the San Diego Shell Club

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Meeting date: third Thursday, 7:30 PM,  
Room 104, Casa Del Prado, Balboa Park, San Diego

## PROGRAM

### Extinction Dynamics of the Late Neogene Pectinidae of California

Travis Smith, who will receive his Masters Degree in Ecology, Behavior, and Evolution at UC San Diego, will give a slide presentation on the Recent and fossil pectens of California.

Meeting date: February 17, 2000  
Shells of the month: Recent and fossil pectens

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## CLUB NEWS

### Club Granted 501C(3) Status By the IRS

The San Diego Shell Club has been a non-profit organization since its incorporation in January 1969. All gifts to the Club from that time forward were considered tax deductible. Recently, however, questions were raised by the IRS concerning the Club's non-profit status even though the Club's non-profit position was grandfathered by its original non-profit designation.

In December 1999 the Club applied for and received a letter of determination reaffirming the Club's status as a non-profit organization under current IRS regulations. Now, anyone wishing to receive tax credit for subsequent donations will be provided with the Club's 501C(3) identification number.

### Minutes of the San Diego Shell Club Meeting - January 20, 2000

President Mike Mason welcomed everyone to the first meeting of the millenium and the minutes of the January meeting were approved as published in *The Festivus*. The membership welcomed out-of-town member Lewis Deschaine.

Mike announced that the Club was granted its non-profit status by the federal government [see above].

Librarian Kay Klaus showed the new books available in the Club library, the wentletrap book [reviewed this issue], the new Tom Rice directory and Volume 1 of *Marine Shell Mollusca of Japan* [see review in January issue]. Volume two will be published later and will contain the plates. Also in the library is the latest issue of *Basteria*. Kay also mentioned that the library is open and available but since the wheels need to be replaced, it cannot be wheeled into the meeting room area.

Mike introduced the speaker for the evening, Roger Seapy of California State University, Fullerton. Roger spoke on heteropods and told that his interest in this bizarre group of shells began in graduate school.

The three families in the group are the Atlantidae, the Carinariidae and the Pterotracheidae (which have no shell). They are small pelagic animals best identified

using a combination of shell, eye, opercular and radular characters. His images of these live, transparent animals were incredible and he explained their anatomy and life style in a manner easily understood by those in attendance. These animals are all good predators. There is only one species of atlantid found off the California coast.

Roger had a number of handouts of copies of articles, color plates and other information on the heteropods for those who were interested.

After the talk, a desk diary and calendar set was auctioned and won by Kay Klaus. The winner of the door prize was Karen Mason. The meeting was adjourned to look at some of the original SEMs for plates of heteropods that Roger brought in and to enjoy the refreshments from Carole and Jules Hertz and Linda and Kim Hutsell.

Silvana Vollero

### San Diego Shell Club Auction/Potluck - 2000

Mark your calendars!! The date for the Club's annual Auction/Potluck has been set for 1 April 2000. Does that say something? We've been very fortunate, once again, that Wes Farmer has agreed to host the event at the clubhouse of his condo. A map will be in the March issue.

It is definitely not too early to prepare your donations for the auction. Bring them to the February or March meetings or arrange for pickup by a board member. Remember that your donations go to support the Club's activities such as *The Festivus*, donations to scientific organizations, participation in the Greater San Diego Science Fair, library purchases and social events.

And plan to come to the auction/potluck. It's a great party.

### A Generous Donation to the Club

A generous donation by Don and Ursula Shasky of many cartons of plastic boxes was made to the Club. The boxes of many different sizes, small and large, and both new and used will be available for sale at a future Club meeting. The Club thanks them for their gift.



## NEW DISTRIBUTIONAL RECORDS FROM BAHÍA MAGDALENA, BAJA CALIFORNIA SUR, MÉXICO

JULES HERTZ<sup>1</sup>

Associate, Santa Barbara Museum of Natural History,  
2559 Puesta del Sol Road, Santa Barbara, California 93105, USA

Bahía Magdalena, Baja California Sur, México, is in a transitional zone, where both Panamic and Californian species can be found. There are no checklists or other reports on the mollusks that occur there and the only source of published records is Keen (1971), with the exception of a few mollusks with type localities in Bahía Magdalena. Many species that occur toward the north end of the Golfo de California could be expected to occur in Bahía Magdalena. Near the entrance of the bay there are many species characteristic of the Californian Province, but further within, summer temperatures can be expected to be higher and the fauna more typical of that of sheltered bays in the Golfo de California (McLean, pers. comm.).

The material discussed and figured herein was collected at Bahía Magdalena on 10 December 1997 by John Jackson of San Diego, California. He collected it by shaking rocks and large shells and by scooping grunge from under rocks at a depth of 9-12 m (30-40 ft) just inside the entrance (Punta Entrada) to the bay. The material was given to Kirstie L. Kaiser of Puerto Vallarta, Jalisco, México. The larger material was separated, and I was given the opportunity to sort the dried grunge for minute species. To my surprise, this sorting produced a number of new distributional records. This material is now in the Kaiser Collection.

Figures 1 and 2 are two views of a specimen of *Rissoina* (*Rissoina*) *stricta* Menke, 1850, a very variable species. Abbott (1974) placed *Rissoina fortis* (C.B. Adams, 1852), *R. favilla*, *R. io*, *R. gisna*, *R. mazatlanica*, and *R. dina* all of Bartsch, 1915, into synonymy of *R. (R.) stricta*. Keen (1971) reported *R. (R.) stricta* at Cabo San Lucas through the Golfo de California and south to the Islas Tres Marias, México.



Figures 1, 2. *Rissoina* (*Rissoina*) *stricta* Menke, 1850, 7.2 mm L.  
Photos: D. K. Mulliner.

Abbott (1974) reported the distribution as the Golfo de California and the Islas Galápagos, Ecuador. Emerson (1995) extended the distribution to the Islas

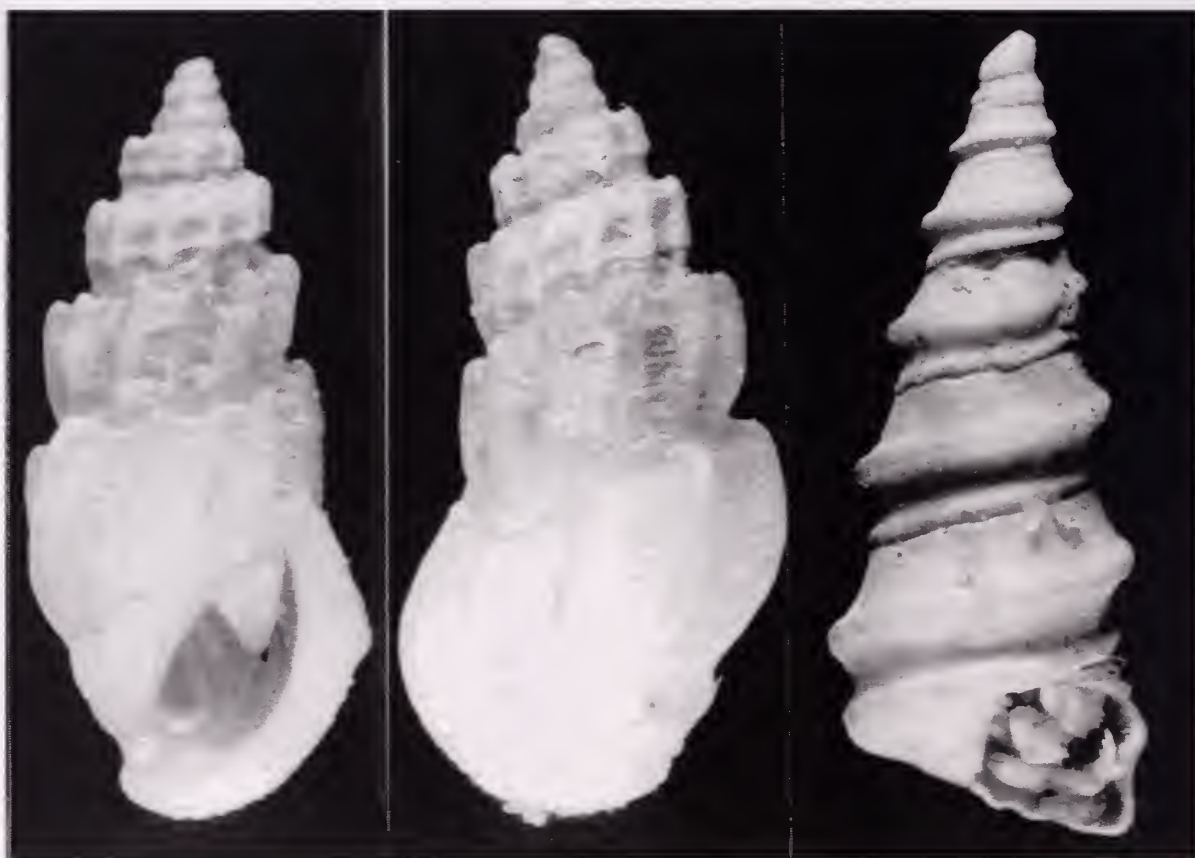
<sup>1</sup> Mailing address: 3883 Mt. Blackburn Ave., San Diego, CA 92111, USA.

Revillagigedo, México, and Shasky (1996) reported the species at Isla del Coco, Costa Rica. The occurrence at Bahía Magdalena extends the distribution north on the west coast of Baja California Sur.

Two views of a shell of *Folinia insignis* (de Folin, 1867), not A. Adams & Reeve, 1850, are shown in Figures 3 and 4. Ponder (1985) raised *Folinia* Crosse, 1869, to the genus level and placed *Rissoina* (*Folinia*) *signae* Bartsch, 1915, into the synonymy of *F. insignis*. Keen (1971) listed Panamá as the locality for *F. signae*. Draper (1974) extended the distribution north to the upper Golfo de California and south to the Islas Galápagos. Skoglund and Koch (1995) confirmed the distribution to Estero Morua, Puerto Peñasco, Sonora, México. The occurrence at Bahía Magdalena extends the distribution to the west coast of Baja California Sur.

Jalisco, México, to El Salvador. Draper (1972) extended the distribution north to Santa Rosalía, Baja California Sur, and Keen and Coan (1975) reported it from near Bahía Kino, Sonora, México. Finet (1994) reported it from the Islas Galápagos. The finding of this species at Bahía Magdalena extends the distribution to the west coast of Baja California Sur.

Figure 6 is an apertural view of *Seila assimilata* (C.B. Adams, 1852). Keen (1971) reported the distribution of this species as the Golfo de California to Panamá. DuShane and Draper (1975) stated the distribution as Bahía Todos Santos, Baja California (outer coast), throughout the Golfo de California and south to the Islas Galápagos, and northern Perú. The distribution has been extended to include Isla de Malpelo, Colombia (Birkeland, Meyer, Stames &



Figures 3, 4. *Folinia insignis* (de Folin, 1867), not A. Adams & Reeve, 1850, 2.3 mm L. Photos: D. K. Mulliner.

A specimen of *Vermicularia frisbeyae* McLean, 1970 is shown in Figure 5. Keen (1971) reported the distribution of this species as Bahía de Tenacatita,

Figure 5. *Vermicularia frisbeyae* McLean, 1970, 5.7 mm L. Photo: D. K. Mulliner.

Buford, 1975), and Isla Gorgona, Colombia (Cosel, 1984). The lot cited from Bahía Todos Santos (LACM 66-5) has been identified by McLean (pers. comm.) as



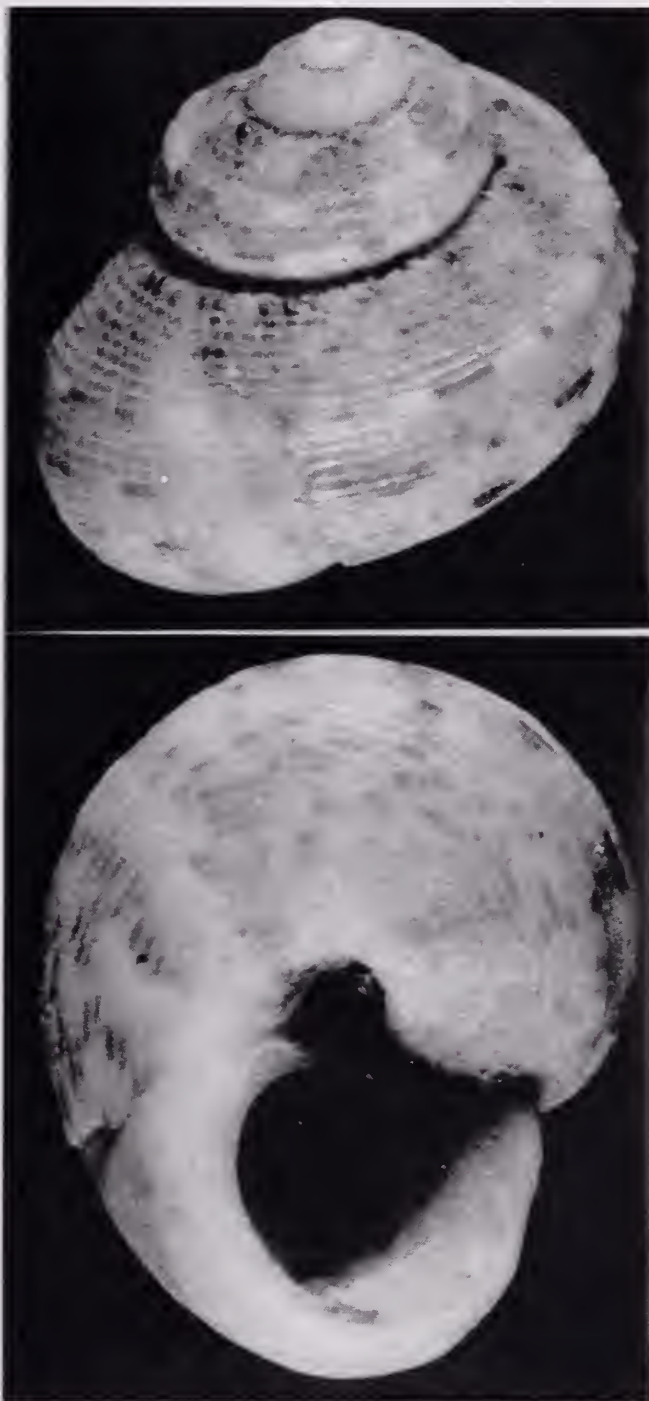
unusually small specimens of *S. montereyensis* that do not show the color pattern of *S. assimilata*. The occurrence of *S. assimilata* at Bahía Magdalena is, therefore, the first found on the west coast of Baja California.



Figure 6. *Seila assimilata* (C. B. Adams, 1852), 3.8 mm L. Photo: D. K. Mulliner.

A specimen of *Otollonia fricki* (Crosse, 1865) is shown in Figures 7 and 8. Keen (1971) gave the distribution of *Arene* (*Otollonia*) *fricki* as Golfo de California to Santa Elena Peninsula, Ecuador. Hickman and McLean (1990) raised *Otollonia* to a genus. This is the first report of the species on the west coast of Baja California Sur.

A specimen of *Cerithiopsis bristolae* Baker, Hanna & Strong, 1938, is shown in Figure 9. The holotype of this species is decollate, and was previously only known from the type locality at Cabo San Lucas, Baja California Sur. Per Henry W. Chaney, *Cerithiopsis cassi* Hertlein & Strong, 1938, is a synonym of *C.*



Figures 7, 8. Two views of *Otollonia fricki* (Crosse, 1865), 3.8 mm diam. Photos: D. K. Mulliner.

*bristolae* (in this case by the narrowest of page priorities) and in fact is nothing but a worn *C. bristolae*.



Figure 9. *Cerithiopsis bristolae* Baker, Hanna & Strong, 1938, 1.8 mm L. Photo: D. K. Mulliner.



Figure 10. *Clathurella rigida* (Hinds, 1843), 5.0 mm L. Photo: D. K. Mulliner.

Keen (1971) reported *Clathurella rigida* (Hinds, 1843) as occurring from the Golfo de California to the Islas las Perlas, Panamá. Shasky (1989) extended the distribution to the Islas Galápagos, Ecuador, and Shasky (1996) noted its occurrence at Isla Benedicto, Islas Revillagigedo, México, and Isla del Coco, Costa Rica. It has also been found at L'île de Clipperton, [France], by K. L. Kaiser (pers. comm.) The grunge from Bahía Magdalena yielded two specimens, each 5.0 mm, of *C. rigida* with immature lips. One of these is shown in Figure 10. The specimens were compared with large lots of material, from juvenile to mature specimens, in the Carol Skoglund Collection.

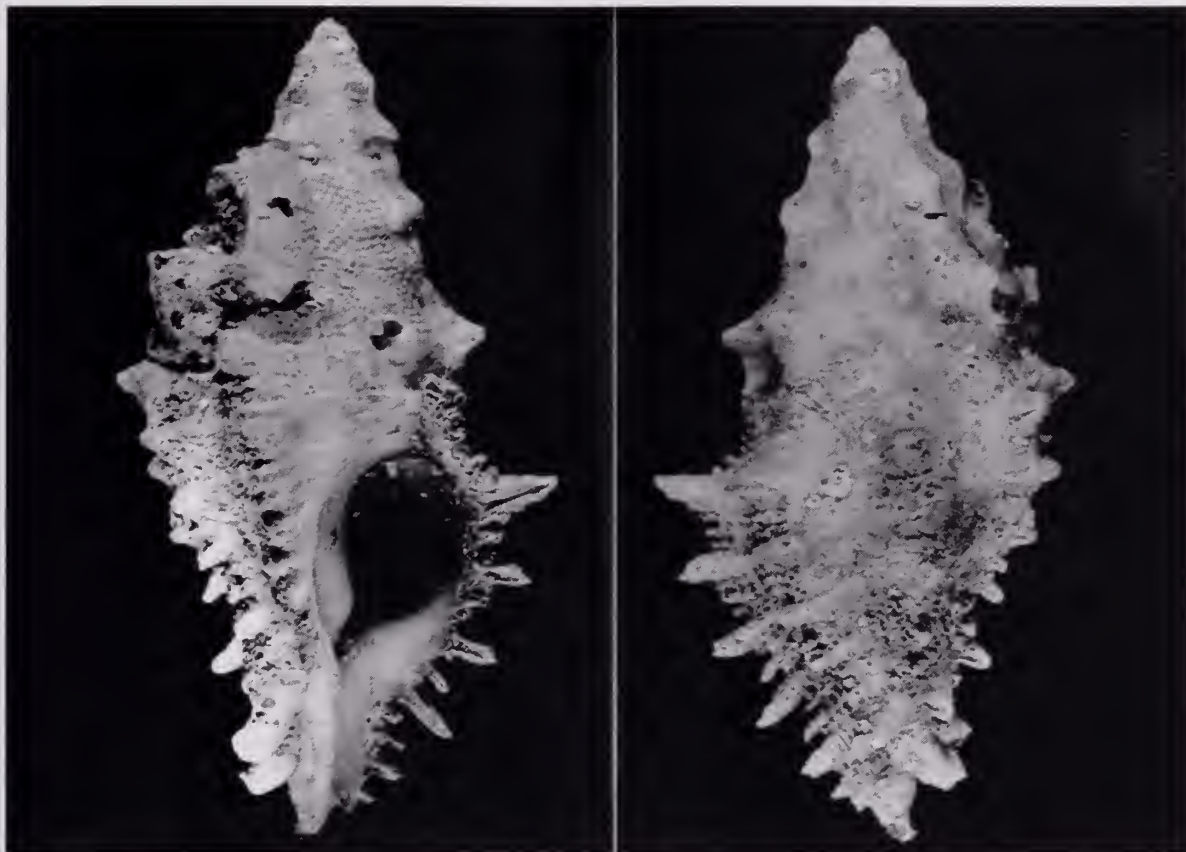
In addition to the minute shells discussed above, some larger shells were found which had not previously been reported from Bahía Magdalena. Figures 11 and 12 are two views of an adult (31.3 mm) specimen of *Muricopsis armatus* (A. Adams, 1854). Keen (1971) reported this species as coming from the Golfo de

California. Vokes (1988) extended the distribution south to Panamá. This is the first time it has been reported from the outer coast of Baja California.

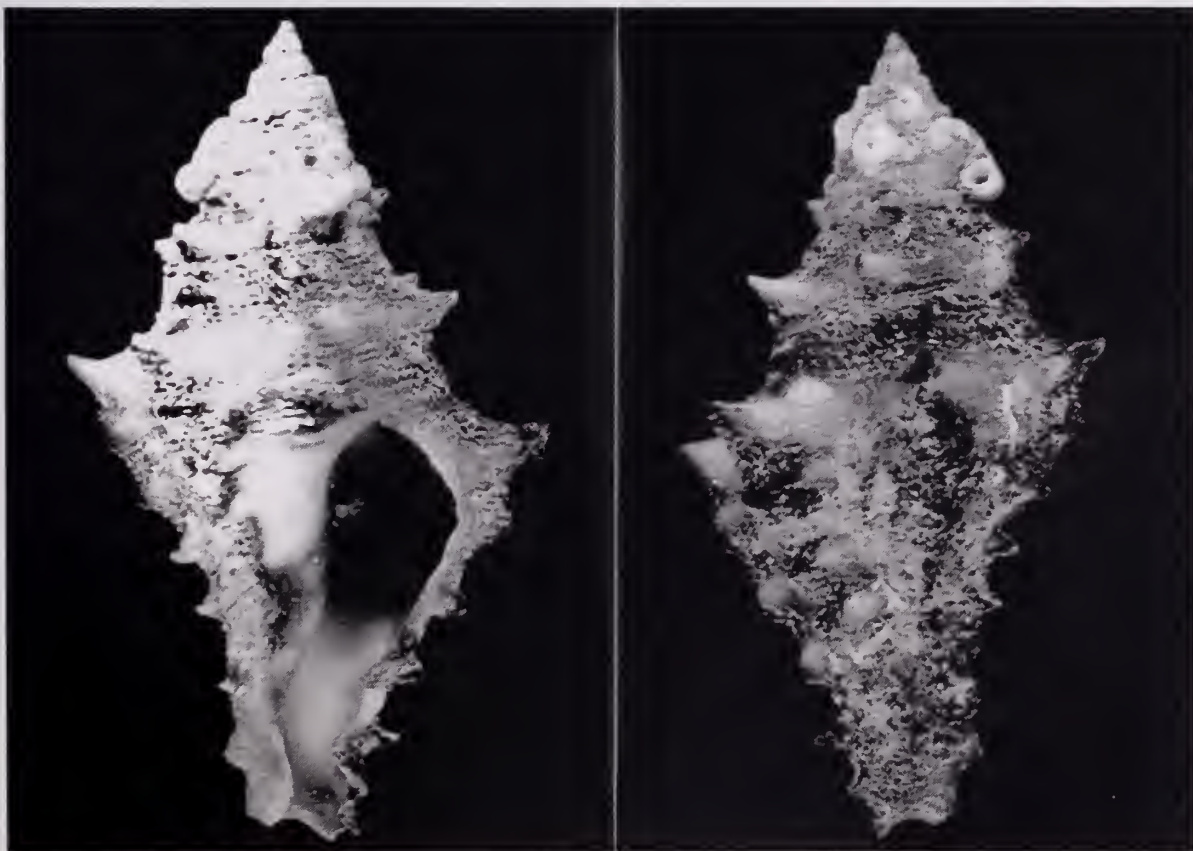
Another *Muricopsis* reported for the first time from Bahía Magdalena is *Muricopsis zeteki* Hertlein & Strong, 1951. Keen (1971) reported it occurring from Puertecitos near the head of the Golfo de California to Guayaquil, Ecuador. Radwin & D'Attilio (1976) extended the distribution to the Islas Galápagos, and Cantera, *et al.* (1979) reported it from Isla Gorgona, Colombia. Gemmell, Hertz and Myers (1980) extended it north to San Felipe, Baja California. An immature shell found at Bahía Magdalena is shown in Figures 13 and 14.

Figure 15 is an external view of the two valves of a 27.3 mm specimen of *Chione (Chione) subimbricata* (Sowerby, 1835). Keen (1971) listed the distribution for this species as La Paz and Guaymas, Golfo de California, to Bayovar, Perú. Alamo and Valdivieso





Figures 11, 12. Two views of *Muricopsis armatus* (A. Adams, 1854), 31.3 mm L. Photos: D. K. Mulliner.



Figures 13, 14. Two views of *Muricopsis zeteki* Hertlein & Strong, 1951, 15.8 mm L. Photos: D. K. Mulliner.



Figure 15. Exterior of valves of *Chione (Chione) subimbricata* (Sowerby, 1835), 27.3 mm L. Photo: D. K. Mulliner.

(1987) extended the distribution south to Chicama, Perú, and Finet (1991) reported the species from the Islas Galápagos. This is the first report of the species on the west coast of Baja California Sur.

Two additional minute species, previously reported from Bahía Magdalena, are also figured here. The first, *Alabina excurvata* (Carpenter, 1857), is actually Keen's Figure 564 (see Keen & Coan, 1975). The specimen shown here in Figures 16 and 17 looks quite different from the photograph in Keen. Carpenter's drawings of this species (Brann, 1966) illustrate its variability. Baker, Hanna and Strong (1938) previously reported the species from Bahía Magdalena. Abbott (1974) placed it into *Finella*, but McLean (pers. comm.) believes that it should remain in *Alabina*.

The second minute species shown here that has previously been reported from Bahía Magdalena is *Elephantulum heptagonum* (Carpenter, 1857). The material found by John Jackson had many specimens of



Figures 16, 17. Two views of *Alabina excurvata* (Carpenter, 1857), 4.0 mm L. Photos: D. K. Mulliner

*Caecum californicum* Dall, 1885, but only a single specimen of *E. heptagonum*. It is shown in Figure 21.



Figure 18. *Elephantulum heptagonum* (Carpenter, 1857), 2.8 mm L. Photo: D. K. Mulliner.



## ACKNOWLEDGMENTS

I am grateful to John Jackson and Kirstie Kaiser for providing the material for study. James H. McLean of the Los Angeles County Museum of Natural History, Henry W. Chaney and Paul Valentich Scott of the Santa Barbara Museum of Natural History, and Carol Skoglund all were very helpful in identifying specimens. I am particularly beholden to David K. Mulliner for his excellent photographs, particularly for those of the microshells, to James H. McLean for critically reviewing the paper, and to Carol Skoglund for providing comparative material.

## LITERATURE CITED

- ABBOTT, R. TUCKER  
1974. American Seashells. 2nd ed. Van Nostrand Reinhold Co. New York 663 pp., 24 pls., 6405 figs.
- ALAMO V., VICTOR & VIOLETA VALDIVIESO M.  
1987. Lista Sistemática de Moluscos Marinos del Perú. Instituto del Mar del Perú Boletín. Volumen Extraordinario 205 pp, 284 figs.
- BAKER, FRED, G DALLAS HANNA & ARCHIBALD M. STRONG  
1938. Some Mollusca of the families Cerithiopsidae, Cerithiidae and Cyclostrematidae from the Gulf of California and adjacent waters. Proceedings of the California Academy of Sciences 23(15): 217-244, pls. 17-23 (May 24).
- BIRKELAND, DAVID K., DAVID L. MEYER, JAMES P. STAMES & CARYL L. BUFORD  
1975. Subtidal communities of Malpelo Island. In Graham, J.B. (ed.) The biological investigation of Malpelo Island, Colombia. Smithsonian Contributions in Zoology 176: 55-68 (Jul. 18).
- BRANN, DORIS C.  
1966. Illustrations to "Catalogue of the Collection of Mazatlan Shells" by Philip P. Carpenter. Paleontological Research Institution, Ithaca, N.Y. Pp.111, 60 pls. (Apr. 1).
- CANTERA K., JAIME R., EFRAIN A. RUBIO R., FRANCISCO J. BORRERO, RAFAEL CONTRERAS R., FERNANDO ZAPATA, & ELIZABETH BUTTKUS  
1979. Taxonomía y distribución de los moluscos litorales de la Isla de Gorgona. En Prah, H.; F. Guhl & M. Grögl (Eds.) Gorgona: 141-167. Universidad de los Andes, Bogotá.
- COSEL, RUDO von  
1984. Moluscos marinos de la Isla de Gorgona (costa del Pacífico Colombiano). Anales del Instituto de Investigaciones Marinas de Punta de Betín 14: 175-257, figs. 1-42.
- DRAPER, BERTRAM C.  
1972. Check list of shells found in scrapings from *Spondylus princeps* taken at a depth of 40 feet, southeast of Santa Rosalia, Baja California, 1969. The Festivus 3(4): 5-7 (Apr.).  
1974. Minute shells - part 6. The Tabulata 7(1): 17-22, figs. 1-10 (Jan. 1).
- DuSHANE, HELEN & BERTRAM C. DRAPER  
1975. The genus *Seila* in the eastern Pacific. The Veliger 17(4): 335-345, figs. 1-30 (Apr. 1).
- EMERSON, WILLIAM K.  
1995. A zoogeographic summary of the marine mollusks of the Revillagigedo Islands (tropical eastern Pacific Ocean). The Festivus 27(1): 3-18, 1 fig. (Jan. 12).
- FINET, YVES  
1991. The marine mollusks of the Galápagos Islands. In Matthew J. James (ed.) Galápagos Marine Invertebrates: 253-280. Plenum Press, New York.  
1994. The marine molluscs of the Galápagos Islands: a documented faunal list. Editions du Muséum d'Histoire naturelle de Genève; 180 pp.
- GEMMELL, JOYCE, CAROLE M. HERTZ & BARBARA W. MYERS  
1980. Seastar predation on mollusks in the San Felipe Bay area, Baja California, Mexico. The Festivus 12(3): 24-55, figs. 1-51 (Mar.).
- HICKMAN, CAROLE S. & JAMES H. McLEAN  
1990. Systematic Revision and Suprageneric Classification of Trochacean Gastropods. Natural History Museum of Los Angeles County, Science Series 35. 169 pp., 100 figs. (Nov. 26).
- KEEN, A. MYRA  
1971. Sea Shells of Tropical West America: Marine Mollusks from Baja California to Peru. Stanford University Press, i-xiv + 1064 pp., ca. 4000 figs.
- KEEN, A. MYRA & EUGENE V. COAN  
1975. "Sea Shells of Tropical West America": additions and corrections to 1975. The Western Society of Malacologists Occasional Paper 1, 66 pp. (Jun. 22).
- RADWIN, GEORGE E. & ANTHONY D'ATTILIO  
1976. Murex Shells of the World. An Illustrated Guide to the Muricidae. Stanford University Press, 284 pp., 32 pls., 192 text figs.
- SHASKY, DONALD R.  
1976. Marine mollusks of Panama Bay. Bulletin of the American Malacological Union, Inc. for 1975: 47 (May).
- SKOGLUND, CAROL & ROBERT KOCH  
1995. New distributional information for Panamic Province Rissooidea (Mollusca: Gastropoda). The Festivus 27(2): 23-28, 1 fig. (Feb. 9).

AN UNUSUAL POPULATION OF  
*MURICOPSIS PAUXILLUS* (A. ADAMS, 1854)  
AT PLATANITOS, NAYARIT, MÉXICO

CAROLE M. HERTZ<sup>1</sup>

and

BARBARA W. MYERS<sup>2</sup>

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A specimen of a small, almost all-white *Muricopsis* was collected by Hertz intertidally on a rock at low tide (0.33 m) at Platanitos, Nayarit, México in February 1999. The unusual specimen was given to Carol Skoglund for identification. She noted that she had 12 additional specimens in her collection as *Muricopsis* sp. from the same locality. They were found, also intertidally among rocks, in December 1972.

After comparing these 13 specimens with Panamic *Muricopsis* species in the collection of the San Diego Natural History Museum (SDNHM) and the Skoglund, Hertz and Myers collections, we determined that the specimens were a variant form of *Muricopsis pauxillus* (Figure 1).

Comparison of the protoconchs of the Skoglund and Hertz specimens with that of *M. pauxillus* showed them to be the same, both with 1½ strongly angulate whorls, tilted opposite to succeeding whorls with a cord at the shoulder (Figure 2). This can be compared with the protoconch of *M. pauxillus* illustrated in Radwin & D'Attilio (1976: 170, fig. 108).

The spiral sculpture of the thirteen white specimens is scarcely lamellose. Mature specimens have an all-white aperture and are noded at the varices, rarely with



Figure 1. *Muricopsis pauxillus*, 14.6 mm, a white variant form of the species from Platanitos, Nayarit, México, Skoglund Collection. Photo: D. K. Mulliner.

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a spine. The other *M. pauxillus* specimens are scaly, form short, sharp spines at the varices, and have an aperture color from deep mauve to off-white, showing spiral bands within.

Interestingly, the study of 17 lots of *M. pauxillus* in the SDNHM from Jalisco, Nayarit and Sonora, México, as well as specimens in the Hertz and Skoglund collections, revealed no other all-white specimens.

Our appreciation is extended to Carol Skoglund for making her specimens available for study, to David K. Mulliner for the photo of the variant specimen, and to Joyce Gemmell for the camera lucida drawing of the protoconch of a *Platanitis* specimen.

#### LITERATURE CITED

RADWIN, GEORGE E. & ANTHONY D'ATTILIO

1976. *Murex Shells of the World. An Illustrated Guide to the Muricidae*. Stanford University Press, 284 pp., 32 pls., 192 text figs.



Figure 2. *M. pauxillus*, protoconch of a 7.0 mm specimen in the Skoglund Collection from the same locality. Drawn with the aid of a camera lucida attachment on a Wild microscope (x 50). Drawing: Joyce Gemmell.

## 2000 LOW TIDES FOR THE NORTHERN GULF OF CALIFORNIA

The entries below show periods of low tides of -4.0 feet and below. The times of low tides are given in Mountain Standard Time. To correct for San Felipe, subtract one hour from listed times which are for

Puerto Peñasco (San Felipe is on Pacific Standard Time). Tides below the midriff of the Gulf cannot be estimated using these entries. All entries are approximated times and tides.

Feb. 17	6:30 pm	-4.2	May 4	7:45 am	-4.5	Aug. 1	8:30 am	-4.0
Feb. 18	7:15 pm	-5.0	May 5	8:15 am	-4.4	Aug. 28	7:00 am	-4.0
Feb. 19	8:00 pm	-5.3	June 1	6:30 am	-4.1	Aug. 29	7:45 am	-4.2
Feb. 20	8:45 pm	-4.3	June 2	7:10 am	-4.4	Aug. 30	8:10 am	-4.0
Mar. 5	7:15 pm	-4.0	June 3	8:00 am	-4.7	Nov. 11	7:10 pm	-4.2
Mar. 6	8:00 pm	-4.0	June 4	8:45 am	-4.2	Nov. 12	8:00 pm	-4.1
Mar. 18	7:15 pm	-4.2	July 1	7:15 am	-4.2	Dec. 9	6:00 pm	-4.0
Mar. 19	8:00 pm	-4.1	July 2	8:00 am	-4.6	Dec. 10	7:00 pm	-4.6
Apr. 5	8:00 am	-4.2	July 3	8:40 am	-4.3	Dec. 11	7:45 pm	-5.0
Apr. 6	8:30 am	-4.2	July 30	7:15 am	-4.2	Dec. 12	8:30 pm	-4.3
May 3	7:00 am	-4.1	July 31	8:00 am	-4.6			

## BOOK NEWS

*The Wentletrap Book: Guide to the Recent Epitoniidae of the World*

By: Art Weil, Leonard Brown and Bruce Neville

1999. Evolver srl, Rome, Italy. 244 pages, 70 color plates, 507 figures.

Price: \$120.00.

Agent: Evolver srl. Via C. Federici 1, 00147 Rome, Italy. Domestic Agent: Mal de Mer Enterprises, P.O. Box 482, West Hempstead, NY 11552, USA. E-mail: maldemer@masdemer.com

This is a book for collectors, by collectors. It covers a particularly exasperating family (taxonomically speaking) of exquisite shells, which until now has not been dealt with on a global scale, unless one goes back to Lovell Reeve (1873-74) or G. B. Sowerby (1844). Most of the wentletraps are small, diverse, almost invariably white and look the same to a casual observer or even an impatient collector. Recent monographic coverage of the epitoniids has been the regional monographs of Helen Dushane (primarily the eastern Pacific) and Richard Kilburn (Southern Africa). They still remain indispensable.

The present work consists of a short introduction (written somewhat idiosyncratically), a series of eight chapters in which taxa are arranged regionally and by structural similarity, two major appendices, one grouping nominal names by authors and the other presenting descriptions of the myriad genera and subgenera which have been created in the Epitoniidae.

The bibliography is adequate only in coverage of the major works and does not cite all the authors listed in the appendices.

The authors have endeavored to figure as many species as possible and by their estimate have included more than 80% of the described taxa. Each figure has a brief narrative, which mentions distinguishing characters, size, and distribution. These accounts are not necessarily consistent but are informative. Many of the figures used are of type specimens and are vouchered. The photographs were taken by the senior author, who bears responsibility for their varying quality. In some cases, original figures, either engravings or earlier photographs, were adapted for use here.

This book can be recommended to collectors interested in the Epitoniidae because despite any deficiencies in the text or presentation it represents an advance in the coverage of this group and is not likely to be superseded in the foreseeable future. "The Wentletrap (sic) Book" is bound in the black glossy boards, which seems to be the hallmark of mollusk books from Italian publishers.

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Note: This volume will be available in the Club library at the February meeting.



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# THE FESTIVUS

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Meeting date: third Thursday, 7:30 PM,  
Room 104, Casa Del Prado, Balboa Park, San Diego

## PROGRAM

### World Record Size Shells - a Discussion

Kim and Linda Hutsell, two of the authors of the *Registry of World Record Size Shells*, will lead a discussion on the process of registering potential records

and the implications of record size shells. Members are encouraged to bring in their record size shells -- and any that might be.

Meeting date: March 17, 2000

Shells of the month: record size shells - and any that might be

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## CLUB NEWS

**Minutes of the  
San Diego Shell Club Meeting - February 17, 2000**

President Mike Mason called the meeting to order at about 7:45 p.m. The minutes of the January meeting, as published in *The Festivus* were approved. Mike discussed the upcoming auction and a signup sheet was passed around for the potluck dinner. Donations are needed and can be given to any Board member. [See col. 2, this page.] Mike said that a host is still needed for meetings. [If you are willing to take this post, contact Mike at 619-482-1098.]

Mark Scott announced that the used plastic boxes at the back of the room are free to Club members and were donated by Ursula Shasky. New boxes will be sold at an upcoming Club meeting. Mark also read a letter from a woman in France interested in exchanging shells. He will pass on the details to anyone interested.

Kim Hutsell introduced the speaker for the evening, Travis Smith. Travis is working on his PhD at Scripps Institution of Oceanography. His Master's work related to tying together the story of Recent and fossil pectens. He studied the extinction patterns of the region from Humboldt Bay to Isla Cedros. He said that pectens fossilize well and are easy to identify and that there are eleven species of pectens in California today. This is about a 70% extinction rate since there were thirty species in California at one time. There has been no evolutionary rebound. He considered three possible causes for the extinction: taxonomy, body size and latitudinal range. He found that large species have large ranges and that small species have small ranges. If a species is in a restricted area, an environmental change to the area can effect extinction. Geographical range, he said, may be the most influential factor.

The winner of the door prize was Don Guthrie. The meeting was adjourned to look at some of the shells brought in by Kim (pectens from Diamond Island), Mark (cowries) and the Schneiders (fossil pectens) and to enjoy the refreshments contributed by John Bishop, Mike and Silvana.

Silvana Vollero

**Member Ron McPeak at Mission Trails Park**

Ron H. McPeak, longtime Club member now living in Washington state, will give a slide presentation and

sign his new book *Amphibians & Reptiles of Baja California*, a new field guide in the *Sea Challengers* series beautifully written and photographed by Ron. His presentation and book signing will be at Mission Trails Regional Park auditorium, One Father Junipero Serra Trail, San Diego, on Saturday, 18 March from 7:00 - 9:00 p.m. For directions call (619) 668-3275.

**Come to the Auction/Potluck**

The Club's annual Auction/Potluck will be held on April 1<sup>st</sup> at the Summer Hill Clubhouse [see map, last page]. Festivities will begin at 5:00 p.m. (with "Dave's Punch" and soft drinks) while you browse the auction table and the silent auction goodies. Dinner will begin promptly at 6:00 p.m. and the auction will start at 7:00 p.m. on the button!

There will be some exceptional shells including such "rarities" as *Acanthtrophon sorenseni*, *Cancellaria centrola*, *Pterynotus bequaerti*, *Voluta bednalli*, cypraeids *nigropunctata*, *jeaniana*, *venusta* and *rosselli* and *Latiaxis pilsbryi*.

This is the Club's big fundraiser and the biggest social event of the year. The auction provides the Club with the funds necessary to support its many activities such as *The Festivus*, Club library purchases, donations toward student grants and the Greater San Diego Science Fair.

It's still not too late to donate to the auction; if you can't make the March meeting, contact Carole Hertz (858-277-6259) and arrange for pickup. And if you have no shells to donate, you can still attend the auction, have a marvelous time and the goodies you buy will help your collection -- and the Club.

**Too Late for the Roster**

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GROWTH SERIES OF THREE SPECIES OF *PITAR* (*HYSTEROCONCHA*)  
WITH COMMENTS ON A FOURTH SPECIES  
(BIVALVIA: VENERIDAE)  
FROM THE PANAMIC PROVINCE

CAROL SKOGLUND<sup>1</sup>

Santa Barbara Museum of Natural History, 2559 Puesta del Sol Road,  
Santa Barbara, California 93105, USA

Years ago, while dredging in Caleta de Los Angeles, Bahía Tenacatita, Jalisco, México, my husband Paul and I brought up several very small *Pitar* specimens that were difficult to identify. These were taken using a dredge with 1/8 inch wire mesh on a mud bottom at a depth of 6 to 20 m. They ranged in size from 3.5 to 4.0 mm width (Figure 1). Although the sturdy shells were very similar, there were slight differences in the overall shape, color, and concentric ribbing that led us to believe that more than one species might be present, perhaps of the subgenus *Lamelliconcha*.

Further dredging of the same area and in other places along the coast of México from the states of Nayarit to Colima over several years provided a growth series needed to prove that our shells were not adults but juvenile *Pitar* of three distinct species, all in the subgenus *Hysteroconcha*. Species in *Hysteroconcha* have concentric lamellae with the posterior area bordered by spines (Keen, 1971). Sizes herein do not include spines.

We dredged *Pitar* (*H.*) *lupanaria* (Lesson, 1830) and *Pitar* (*H.*) *roseus* (Broderip & G. B. Sowerby II, 1851) at Caleta de Los Angeles and *Pitar* (*H.*)



Figure 1, left to right: *Pitar lupanaria* 3.5 mm; *Pitar roseus*, 4.0 mm; *Pitar multispinosus*, 3.5 mm.

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*multispinosus* (G. B Sowerby II, 1851) at both Lo de Marcos, Nayarit, and at Bahía Santiago, Colima, México. Paul photographed the shells, and I reported on them at an annual meeting of the Western Society of Malacologists (Skoglund, 1976).

Abbreviations used herein are: AMNH, American Museum of Natural History, New York; ANSP, The Academy of Natural Sciences, Philadelphia; CAS, California Academy of Sciences, San Francisco; LACM, Los Angeles County Museum of Natural History, Los Angeles; SBMNH, Santa Barbara Museum of Natural History, Santa Barbara; USNM, National Museum of Natural History, Smithsonian Institution, Washington, D.C.

The shell of *Pitar lupanaria* at 5.0 mm is white with rolled concentric ribs and a slightly truncate posterior end (Figure 2). As the shell matures, the ribs become lamellar near the margin, and the ventral third takes on a rosy color. The first spines on the posterior slope appear at about 9 mm (Plate I, Figure A). At 21 mm in size, the shell is almost adult except that there



Figure 2. *Pitar lupanaria* 5.0 mm.

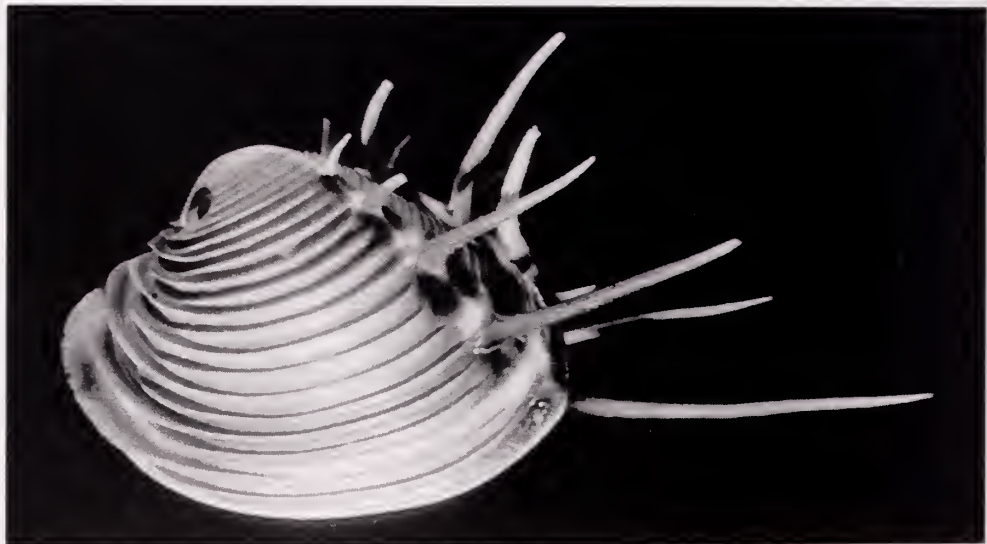


Figure 3. *Pitar lupanaria*, 21 mm.

are two rows of spines instead of the single row in the adult (Figure 3). While the figured shell was rose colored when the photo was taken in 1976, it has now faded to light tan. As the shell matures (Plate I, Figure B), the new concentric ribs are rolled, while raised lamellae flare over the anterior edge of the most often rosy or violet colored shell. A second row of long

spines is present until the shell reaches about 20 mm, then becomes obsolete. Mature shells have blotches of purple on the disc at the base of each spine. The color range of other specimens in my collection is from almost pure white to a bright brown. The species can attain a size of 100 mm, including spines (Hutsell et al., 1997). The shell without spines reaches 78.5 mm



(Hutsell, pers. comm).

*Pitar multispinosus*, in contrast, already has both the first spines and the first rose-colored, raised lamellae near the ventral margin at 4.5 mm (Figure 4).



Figure 4. *Pitar multispinosus*, 4.5 mm.

The umbones are more pronounced and of a dark rosy-purple color; the rolled concentric ribs are less pronounced than on the early stages of *P. lupanaria*. More ribs and spines are added as the shell grows to 6 mm (Plate I, Figure C). At 17.5 mm the shell appears to be mature. Except for the umbonal area, the concentric ribs are all raised lamellae, which are higher just anterior to the first of two rows of close-set spines. This area is file-like to the touch, and this is a good diagnostic feature of this species (Plate I, Figure D).

*Pitar lupanaria* is smooth in this area and the spines are placed farther apart. Keen (1971) says that *P. multispinosus* is brown rather than purple and attains 40 mm. My shells, from Lo de Marcos, Nayarit, México, south to Salinas, Ecuador, were a rosy color when fresh, and still retain more of a rose than a brown color. The largest *P. multispinosus* in my collection is 31 mm.

*Pitar roseus* starts out much as the other two species, but is slightly more elongate (Plate I, Figure E). At 5 mm, the shell is rosy with whitish areas on both the anterior and posterior slopes. The umbones are rosy-purple and the concentric lamellae are raised (Figure 5). At 6 mm the iridescent periostracum characteristic of the species can be seen on most live-taken material. This periostracum is apparently fragile, as it



Figure 5. *Pitar roseus*, 10 mm.

is rarely seen on beach-drift material. As the shell grows, either one or two rows of very short spines appear. A thin white stripe occurs under the anterior-most row of spines. The second, more posterior, row becomes obsolete by about 15 mm, and even this apparently wears off as the shell matures. The rolled concentric ribs become raised lamellae on the anterior slope (Plate I, Figure F). Some shells are white in this area. The largest specimen in my collection is 55 mm.

A fourth species, *Pitar brevispinosus* (G. B. Sowerby II, 1851) (Figure 6), completes the list of *Hysteroconcha* currently known from the Panamic Province (Keen, 1971). I have only seen mature *Pitar brevispinosus*. The all-white shell is similar to *P. roseus*, but more trigonal and with large, fold-like, concentric ribs. It has a shiny periostracum but without the iridescence seen in *P. roseus*.

*Pitar brevispinosus* is figured by Olsson (1961) with a distribution as "Gulf of California to Ecuador". Olsson states that he has seen the shell, which he calls rare, only from southern Colombia and Ecuador. He cites the original description by Sowerby as the source for a shell from California. Sowerby (1851) cites a shell from the Cuming collection as coming from California. Since Cuming did not collect in California, it is possible that Olsson used the Golfo de California instead of California as his distribution. Keen (1971) used the Olsson illustrations and distribution.



Figure 6. *Pitar brevispinosus*, 42.0 mm. Photo: D. K. Mulliner.

I collected four *P. brevispinosus*, still alive at the high tide line near the village of Camerones, Esmeraldas, Ecuador, in April, 1981. Virginia Maes and I also found 12 valves in the intertidal area. These valves are now at ANSP (356905). One shell of my lot is now at SBMNH (345321). Neither LACM or CAS has the shell in their collections. The shells in the collection of AMNH labeled as *P. brevispinosus* from California were not that species. The Smithsonian Institution (USNM) has three lots, none of which I have seen. The distribution is from Nicaragua (USNM 703665), the Golfo de Panamá (USNM 6228) to Ecuador (USNM 517723).

I have never seen this species in many years of collecting in the Golfo de California, México, and unless more information comes to light, would limit the distribution from Nicaragua to Ecuador.

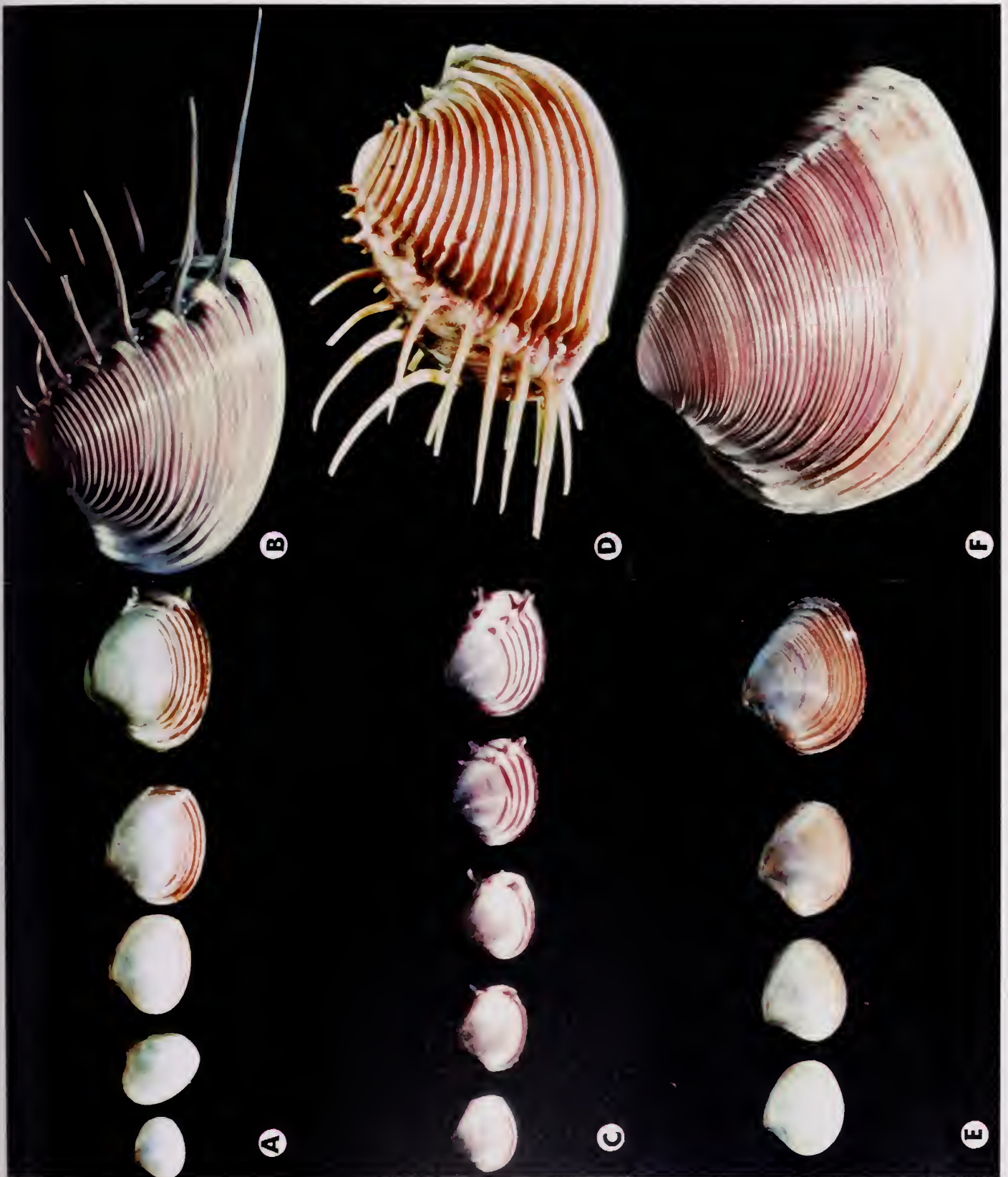
My thanks to Lindsey Groves (LACM), Liz Kools (CAS), Raye Germon (USNM) and Ned Gilmore (ANSP) for checking their collections; Henry Chaney (SBMNH) and Jay Cordeiro (AMNH) for the use of material in their institutions and David K. Mulliner for photographing the *Pitar brevispinosus*. All other

photographs were taken by the late Paul Skoglund.

#### LITERATURE CITED

- HUTSELL, KIM C., LINDA L. HUTSELL & DONALD L. PISOR  
1997. Hutsell and Pisor's Registry of World Record Size Shells. Snail's Pace Productions, San Diego, California, 101 pp.
- KEEN, A. MYRA  
1971. Sea Shells of Tropical West America: Marine Mollusks from Baja California to Peru. Stanford University Press, Stanford, Calif., i-xiv + 1064 pp.; ca. 4,000 figs.; 22 color pls.
- OLSSON, AXEL A.  
1961. Mollusks of the Tropical Eastern Pacific Particularly from the Southern Half of the Panamic-Pacific Faunal Province (Panama to Peru). Panamic-Pacific Pelecypoda. Paleontological Research Institution, Ithaca, N.Y. 574 pp.; pls. 1-86 (Mar. 10).
- SKOGLUND, CAROL  
1976. Spine development of juveniles in three species of Panamic *Hysteroconcha* (Bivalvia: Veneridae). Abstract. The Western Society of Malacologists Annual Report 9:37-38 (Oct.).
- SOWERBY, G. B.  
1851. Thesaurus Conchyliorum. Vol. 2 p. 632 no. 71 pl. 132, fig. 109.







## FOURTH ANNUAL SCUM MEETING

The fourth annual meeting of the Southern California Unified Malacologists (SCUM) was held 15 January 2000 in San Diego in the Munk Seminar Room, Institute of Geophysics & Planetary Physics, Scripps Institution of Oceanography, La Jolla, California. Hugh Bradner hosted the meeting in this beautiful room high on a cliff overlooking the La Jolla shoreline. The meeting began at 10:00 a.m. and early arrivals enjoyed coffee and donuts while conversing with other attendees. There were approximately 35 in attendance with some from as far away as Long Beach and Los Angeles. At the beginning of the meeting, there was a round of self introductions followed by informal presentations of 15 minutes or less from each attendee, outlining recent or current projects and accomplishments.

Larry Lovell opened the meeting with a discussion of the Scripps Institution of Oceanography (SIO) Collection and the status of moving it to a new building. Kent Trego showed slides and discussed work on benthic material from Port Foster (caldera rim), Deception Island, off Antarctica. He talked about five bivalve species and mentioned articles which appeared in *Antarctic Science*. Terry Arnold told of collecting fossil cowries in the lower Miocene Muddy Creek beds near Hamilton, Victoria, Australia, and what times of the year were good for collecting and what times one might encounter many poisonous snakes. Wes Farmer discussed his collecting during the past four years at Torrey Pines State Park and his inability to get a permit this year. He hoped that some of the attendees might be of help in resolving his problem. Kim Hutsell told of a recent collecting trip to Diamond Island in the Coral Sea, and he brought a display of some of the larger shells found there. Tom Deméré and Jim McLean reported on current status of events at the San Diego Natural History Museum (SDNHM) and Los Angeles County Museum (LACM), respectively. Tom reported on the status of the new museum addition in San Diego, and Jim gave an update on new funding available at Los Angeles. Tom discussed his fossil work which covers "whales to snails," mentioning Eocene material from the Scripps Formation. Jim also updated the status of

the book he is authoring on gastropods from Alaska to Baja California. Carole Hertz talked about a project that she and coworkers are doing on turrid species collected by Joyce Gemmell in San Felipe, Baja California. Mike Miller gave a slide presentation of beautiful nudibranchs from Negros Oriental in the Philippines. One of the slides showed *Nembrotha mullineri* named for Dave Mulliner, who was also in the audience. George Kennedy reported on Eocene material from near Oceanside and off Rancho Bernardo. Nancy Schneider talked of fossil material that she and her husband Bill have collected over many years from a Pleistocene Terrace off Mulegé, Baja California, and described the donations they had provided to set up a Museum in Mulegé, including display cabinets and specimens. Hans Bertsch showed pictures of preserved specimens of *Bathydoris aioca* collected off Oregon in approximately 2800 meters (paper in press). LouElla Saul is working on fossil volutes from 85 million years ago from Vancouver, British Columbia to Baja California. Yvonne Albi showed drawings of rudistids; she is working on the morphology and taxa of this group from the late Cretaceous of Jamaica. Roger Seapy is busy writing chapters for books on heteropods, pteropods, etc. Christine Louie spoke of her work on pipefish and limpet studies tied to eelgrass beds from San Diego to Sitka, Alaska. Don Cadien and John Ljubenkov briefly discussed environmental studies being conducted off the southern California coast and web sites on the Internet where one could download some of the results. Don mentioned finding an *Akera* specimen off our coast which would be a first. Daniel Geiger talked about his work on worldwide abalone and on the phylogeny of scissurellids. Lance Gilbertson is working on new species and anatomy of land snails of the Southwest. Others in the audience also made brief statements about their recent endeavors.

The meeting was adjourned early in the afternoon and attendees were invited by Larry Lovell for a guided tour of the new facilities for housing the SIO collections.

The fifth annual meeting of SCUM will be hosted at the LACM.

Jules Hertz



## STUDENT GRANTS AVAILABLE

As part of their commitment to the continued study of mollusks, the Western Society of Malacologists, the Santa Barbara Malacological Society, the San Diego Shell Club, and the Northern California Malacozoological Club are again pleased to announce the availability of grants to support student research in malacology.

Funds are available for actual research costs, including but not limited to, field and laboratory equipment, chemicals, photographic supplies, computer time and supplies, microscope usage fees, and reasonable research travel costs.

**ELIGIBILITY:** Applicant must be a full time student in a formal graduate or undergraduate degree program. The thesis, dissertation or research project must be focused primarily on the systematics, biology, ecology, physiology, biochemistry, or paleontology of marine, terrestrial or freshwater mollusks. Research currently in progress or beginning in the 1999-2000 academic year will be considered.

**REQUIREMENTS:** Six copies of the following documents are required for each application:

1. Cover application page with proposal title, applicant name, addresses, contact numbers, etc, including a listing of no more than five keywords that describe the proposed research.
2. The proposal, limited to two pages, which discusses the research project and its malacological significance including details of the work to be aided by this grant.
3. A budget which outlines how the grant funds will be used.
4. A resume or outline of the applicant's academic background.
5. A letter of recommendation from the applicants research advisor (original and 5 copies to be sent separately by advisor).
6. A list of grants and amounts that are currently being received or have been applied for in the 1999-2000 academic year.

No electronic submissions, mail it. Remember 6 copies.

**AWARD:** Research grants up to \$1,000 are available.

**APPLICATION DEADLINE:** Completed applications must be received no later than 15 APRIL 2000. Awards will be announced during the joint meeting of the Western Society of Malacologists and the American Malacological Society, July 7-12, 2000.

Mail to: Malacology Grant, Department of Invertebrate

Zoology, Santa Barbara Museum of Natural History, 2559 Puesta del Sol Road, Santa Barbara, CA 93105 USA.

For further information contact: Henry Chaney at (805) 682-4711, ext. 334 (voice); (805) 963-9679 (fax); [hchaney@sbnature2.org](mailto:hchaney@sbnature2.org)

## JOINT MEETING OF AMS AND WSM

The 2000 joint meeting of the American Malacological Society and the Western Society of Malacologists will be held at San Francisco State University from Friday, July 7 to Wednesday, July 12. At this meeting, AMS and WSM will sponsor three symposia:

The Place of Malacology in Comparative Biology, convened by Michael Ghiselin, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118; phone: (415) 750-7084; fax: (415) 750-7090; e-mail: [mghiselin@calacademy.org](mailto:mghiselin@calacademy.org)

Systematics and Ecology of Opisthobranch Gastropods, convened by Angel Valdes, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118; phone: (415) 750-7110; e-mail: [avaldes@calacademy.org](mailto:avaldes@calacademy.org); fax: (415) 750-7090.

Advances in the Study of the Behavior of Recent and Fossil Cephalopods, convened by Roland Anderson, The Seattle Aquarium, Pier 59, 1483 Alaskan Way, Seattle, WA 98101-2059; phone (206) 386-4359; e-mail: [roland.anderson@ci.seattle.wa.us](mailto:roland.anderson@ci.seattle.wa.us); fax: (206) 386-4328.

The meeting will include a banquet at the California Academy of Sciences and the AMS Annual Auction. Optional field trips, including excursions to Mt. San Bruno with Neil Fahy, Monterey Bay Aquarium with Angel Valdes, and Pt. Reyes National Seashore and Mt. Tamalpais with Terry Gosliner will be available for participants to attend following the conclusion of formal sessions.

Housing will be available in several categories at San Francisco State University dorms. The accommodations are designed to provide affordable housing to students as well as hotel-style private rooms with daily maid service. All housing options include breakfast.

For further information and registration please send an e-mail to: [ams-wsm@calacademy.org](mailto:ams-wsm@calacademy.org) or visit our web site at [http://www.calacademy.org/research/html/malacological\\_meeting.html](http://www.calacademy.org/research/html/malacological_meeting.html)

# SAN DIEGO SHELL CLUB

AUCTION/POTLUCK

April 1, 2000



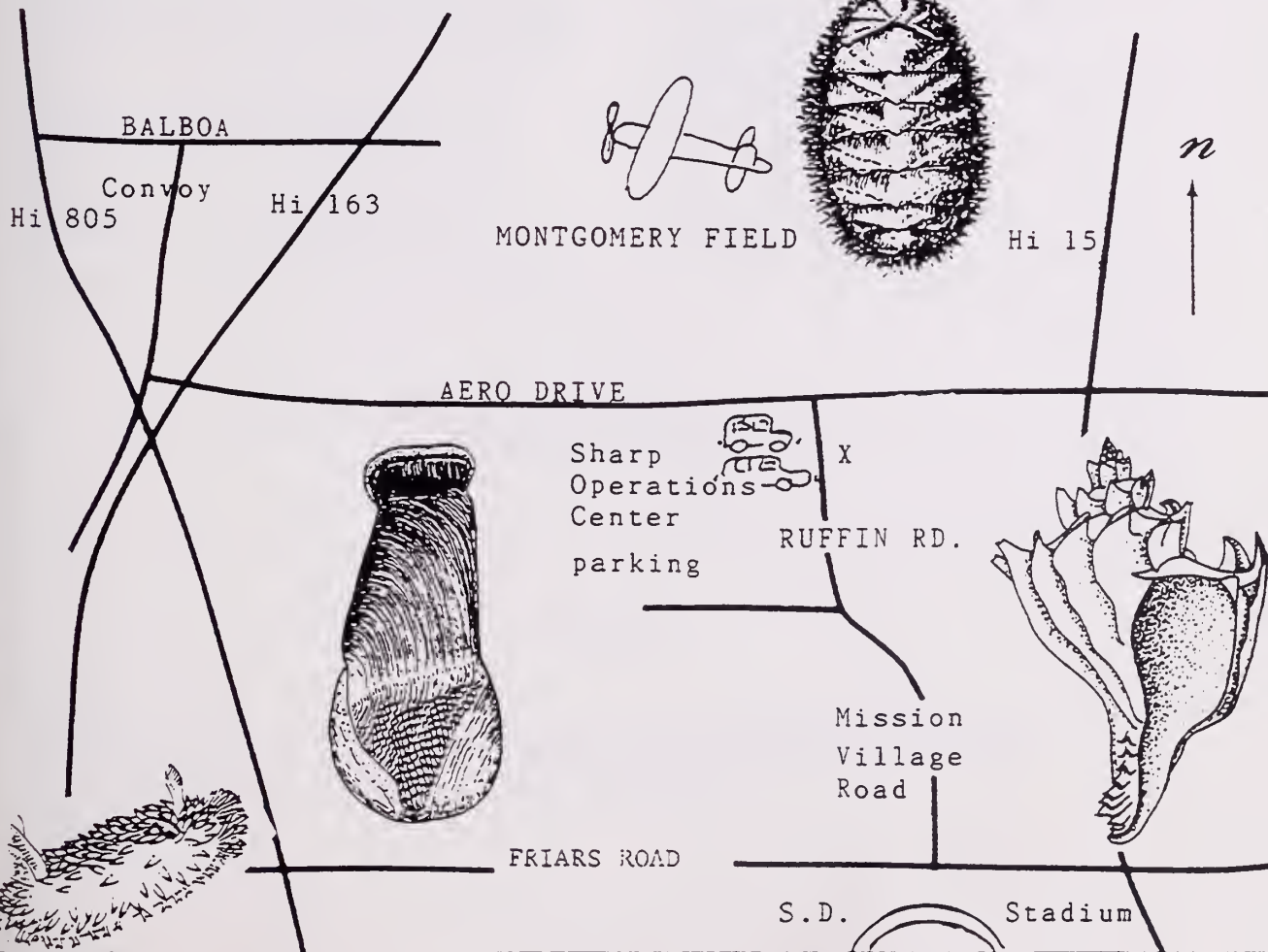
**DIRECTIONS TO THE AUCTION:** from 805: exit onto Balboa, east to Convoy, south to Aero Dr., east to Ruffin Rd., south about a block or two. Clubhouse on East side of street; park at Sharp Operations Center on West side.

From San Diego Stadium on Friars Road: up Mission Village Drive to Ruffin Rd., right turn or north about a half mile, parking on the west side of the street at Sharp Operations Center across from the Clubhouse.

**THE ADDRESS:** 3575 Ruffin Rd. at the Summer Hill Clubhouse.

**TIME:** 5:00 p.m. - ??

**REMEMBER TO BRING:** Your potluck dish with serving utensils. Also, please bring eating utensils for yourself (plates, cups and napkins will be provided). And come ready to have fun!!



The Festivus

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# THE FESTIVUS

A publication of the San Diego Shell Club

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April 13, 2000

Number: 4

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Vice President	Kim Hutsell
Secretary (Corres.)	Mark Scott
Secretary (Record.)	Silvana Vollero
Treasurer	Linda L. Hutsell
Past President	Terry S. Arnold

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Historian	Kay Klaus
Librarian	Kay Klaus

## FESTIVUS STAFF

Editor	Carole M. Hertz
Business Manager	Jules Hertz
Photographer	David K. Mulliner

## MEMBERSHIP AND SUBSCRIPTION

Annual dues are payable to San Diego Shell Club.  
Membership (includes family). Domestic \$15.00;  
Overseas (surface mail): \$18.00, (air mail): \$30.00;  
Mexico/ Canada (surface mail): \$18.00, (air mail): \$20.00.  
Address all correspondence to the San Diego Shell Club, Inc.,  
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Website at: <http://www.molluscs.net/SanDiegoShellClub/index.html> Email: [cmhertz@pacbell.net](mailto:cmhertz@pacbell.net)

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Meeting date: third Thursday, 7:30 PM,  
Room 104, Casa Del Prado, Balboa Park, San Diego

## PROGRAM

There is no regular meeting this month. The Club Auction/Potluck was April 1<sup>st</sup>.  
Next regular meeting: May 18<sup>th</sup>.

## CONTENTS

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## CLUB NEWS

**Minutes of the  
San Diego Shell Club Meeting - March 16, 2000**

President Mike Mason called the meeting to order at 7:45 p.m. The minutes of the February meeting were approved as published in *The Festivus*.

Mike reminded everyone of the upcoming Auction. The potluck sign-up sheet was passed around and members were asked to give their donations to a board member. Kay Klaus reported on new library holdings and, as historian, Kay pointed out that pictures from the September party were on display. Linda Hutsell said that the next Botanical Garden Society meeting will be on May 11<sup>th</sup>. A zoo representative will discuss the plans for expansion. Everyone is invited to attend and bring his/her concerns.

Our own Kim Hutsell was the speaker for the evening. He discussed the *Registry of World Size Records* and how members can measure their shells and the importance of having these world size records. Kim, Linda and Don Pisor took on this project because it had been dropped for about seven years.

Kim explained that the scientific method of measuring the length of a gastropod is from the tip through the axis of the shell and for a bivalve, from the umbo to the ventral margin. For the *Registry*, however, the largest measurement attainable is used. This includes the length to the tip of the spines for *Spondylus*, for example. The maximum length of any shell is measured in any dimension. The *Registry* accepts a minimum size for mature cowries, marginellas and strombus only. Subspecies are used only if they are recognized in the literature and all entries need to be verified by a second party. All in all, the publication contains about 6,000 species but does not include freshwater or terrestrial shells, chitons or fossils. The book is fun and useful and the discussion was very enjoyable. Check your shells at home for records!

The winner of the drawing was Nancy Schneider. Thanks to John Bishop and Terry Arnold for the delicious refreshments.

The meeting was adjourned at 8:55 p.m.

Silvana Vollero

**Too Late for the Roster**

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**Upcoming Mollusk Meetings****The 2000 Bay Area Malacologists (BAM)**

The gathering will be held on Saturday, April 29 in the Trustees Room at the California Academy of Sciences in Golden Gate Park in San Francisco. The meeting will start about 9:00 a.m. Hosts at the Academy will be Dr. Terrence M. Gosliner and Dr. Angel Valdes. For further information contact Matt James: Phone 707-664-2301; e-mail <matt.james@sonoma.edu>  
**AMS/WSM Annual Meeting** - see March issue.

**COA 2000 - Houston, Texas**

The annual meeting of the Conchologists of America will be held in Houston from June 22-26 at the Wyndham Greenspoint Hotel. In addition to the regular program, there will be a welcome party, banquet, bourse and field trips. For further information contact Convention chairperson Lucille Green at 281-376-5630 or e-mail at <dgreen@comwerx.net>

**Molluscs 2000 meeting in Sydney, Australia**

December 4-8, 2000. For the latest information, e-mail <http://www.austmus.gov.au/science/division/invert/mal/malsoc/confer3.htm>

**Club Library Receives a New Book**

The Club library has received a new copy of *Saudi Arabian Seashells* by Doreen Sharabati published in 1981. This 119 page, hardcoverd book is attractive and figures some of the mollusks of the area. It is designed as a "layman's introduction to the subject of marine molluscs in general and to those of the Red Sea and Arabian Gulf in particular." There is generalized information on the area and some of the mollusks are pictured *in situ* others in artistic arrangements.

The book will be available at the May meeting.

## NEW DISTRIBUTION RECORDS FOR TWO SPECIES OF *MURICOPSIS* (MURICIDAE) FROM THE PANAMIC PROVINCE

BARBARA W. MYERS<sup>1</sup>

Associate, Santa Barbara Museum of Natural History,  
2559 Puesta del Sol Road, Santa Barbara, California 93105, USA

George E. Radwin and Anthony D'Attilio described *Muricopsis tulensis* (Figure 1) in the Appendix of their book, *Murex Shells of the World* (1976: 233-234, figs. 184, 185). The type locality was listed as Rancho El Tule, Baja California, México. The holotype and four paratypes were from Rancho El Tule and other paratypes were from Cabo San Lucas and El Pulmo Reef, Baja California Sur. These three localities are all at the tip of the Baja Peninsula; Cabo San Lucas is at the western end and El Pulmo reef is at the eastern tip. Centered between the two lies Rancho El Tule. There has been no record published of this species since it was described.

A specimen of *Muricopsis tulensis* from Los Islotes, Isla Partida, Golfo de California, México, collected by Donald R. Shasky of Oceanside, California, 30 July 1975, was brought to my attention. I compared it with the holotype and paratype in the San Diego Natural History Museum and found it conspecific. Isla Partida, in the Golfo de California, is approximately 150 km north of the type locality. I also identified six specimens in the Carol Skoglund Collection as *M. tulensis*. These specimens were collected intertidally in April 1977 at Shipwreck Beach ½ to 1 mile east of Cabo San Lucas, Baja California Sur. The maximum length of the six Skoglund specimens is 6.4 mm.

A similar species, *Muricopsis pauxillus* (A. Adams, 1854), when juvenile (Figure 2), often bears a close resemblance to *M. tulensis*. *Muricopsis pauxillus*, however, attains a length of 18 mm compared to 7.8 mm for *M. tulensis*. Essentially, *M. pauxillus* has a black shell with white spiral bands and *M. tulensis* is a



Figure 1. *Muricopsis tulensis* Radwin & D'Attilio, 1976. Paratype, 7.6 mm L (SDNHM 61231), collected by Faye Howard at Rancho El Tule, Baja California, México. Photo: D. K. Mulliner.

white shell with chestnut spiral bands. In addition to being longer and broader than *M. tulensis*, the protoconch of *M. pauxillus* is strongly angulate whereas *M. tulensis* has a convex protoconch.

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Drawings of the protoconchs of both species can be found in Radwin & D'Attilio (1976).

DuShane and Poorman (1967) recorded *M. pauxillus* from Guaymas, Sonora, México. Keen (1971) restricted its distribution to the southern Golfo de California especially around Mazatlán. Radwin and D'Attilio (1976) extended its distribution south to Central America. Three specimens of *M. pauxillus* collected by D. R. Shasky in 1989, in 5 to 9 m off an islet in front of Bahía Saladita, Guaymas, Sonora and four specimens (SDNHM 61873) from the same locality in 11 m (also collected by Shasky) confirm the northern distribution to Guaymas on the mainland side of the Golfo de California.

M. Mulliner (1996) reported three specimens of *M. pauxillus* collected in 50 to 60 m from off Isla Danzante on the Baja California side of the Gulf, and specimens in the Carol Skoglund Collection (one from Bahía San Nicolas collected in 1964 and two from Puerto Escondido collected in 1977) both on the Baja side of the Gulf, extend the distribution of *M. pauxillus* across the Golfo de California to the Baja Peninsula.

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#### LITERATURE CITED

ADAMS, ARTHUR,

1854. Descriptions of new shells from the collection of H. Cuming, Esq. Proceedings of the Zoological Society of London for 1853 21: 69-74.

DUSHANE, HELEN & ROY POORMAN

1967. A checklist of mollusks for Guaymas, Sonora, Mexico. The Veliger 9(4): 413-441 (Apr.1).



Figure 2. *Muricopsis pauxillus*, 9.3 mm L, Bahía Saladita, Guaymas, Sonora, México, in 5-9 m under rocks, Shasky Collection. Photo: D. K. Mulliner.

KEEN, A. MYRA

1971. Sea Shells of Tropical West America. Marine Mollusks from Baja California to Peru. Stanford University Press, Stanford, xiv + 1064, 22 color pls., numerous illustrations.

MULLINER, MARGARET

1996. Dredging around Isla Danzante, Gulf of California, Mexico, or what you find at the end of a line. The Festivus 28(6): 62-70, figs. 1-17.

RADWIN, GEORGE E. & ANTHONY D'ATTILIO

1976. Murex Shells of the World. An Illustrated Guide to the Muricidae. Stanford University Press, 284 pp., 32 pls., 192 text figs.

## LIST OF CYPRAEOIDEAN AND TRIVIOIDEAN LITERATURE 1994 through 1999

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**ABSTRACT** Since 1993 at least 552 publications that include Recent and fossil cypraeoideans and trivioideans were published subsequent to the compilation of Groves (1994). Additionally, 383 earlier publications not cited by Schilder & Schilder (1971) or Groves (1994) are listed.

### INTRODUCTION

At least 552 publications that deal either entirely or partially with cypraeoideans and/or trivioideans were published from 1994 through 1999. The second part of this report lists 383 pre-1994 publications not listed in Groves (1994) and/or Schilder & Schilder (1971) that also deal with cypraeoideans and/or trivioideans. References listed include those that emphasize cypraeoideans and/or trivioideans, those that include them in faunal surveys and lists, and general-interest books and articles. Titles marked with an asterisk (\*) indicate works that deal entirely or in part with fossil cypraeoideans and/or trivioideans. Unless otherwise noted, all references are in English and those non-English titles that have English abstracts and/or summaries are likewise noted. Entries not credited to an author, editor, or publisher are referred to as "anonymous." With the exception of theses and dissertations, unpublished works are not included.

Despite the extensive search of recent literature, particularly journals and other publications received by the Malacology and Invertebrate Paleontology Sections, Natural History Museum of Los Angeles County, some titles may have been inadvertently overlooked. The author requests that missed titles be brought to his attention for inclusion in a future compilation.

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### REFERENCES

- GROVES L.T. 1994. Cypraeoidean and trivioidean literature 1971-1993. *The Cowry* n.s., Supplement to Volume 1, 38 p.  
SCHILDER, M. & F.A. SCHILDER. 1971. A catalogue of living and fossil cowries: Taxonomy and bibliography of Trivioidea and Cypraeacea (Gastropoda, Prosobranchia). *Institut Royal des Sciences Naturelles de Belgique Mémoires* 85:1-246.



CYPRAEOIDEAN AND TRIVIOIDEAN  
LITERATURE 1994-1999

\*AKERS, R.E. & T.J. AKERS. 1997. Texas Cretaceous gastropods. Paleontology Section, Houston Gem & Mineral Society, Texas Paleontology Series 6: iii + 1-340, figs. 1-294.

ALMASI, E.S. 1994. The Bay Islands, Honduras. *Of Sea & Shore* 16(4):248-249.

ALMASI, E.S. 1994. A gem of an island. *Of Sea & Shore* 17(2):64-68, 74, 4 unnumbered figs.

ALMASI, E.S. 1995. My treasure of Monte Cristi. *Of Sea & Shore* 18(2):81-85, 5 unnumbered figs.

ALMASI, E.S. 1995. Dar to Mtwara & on to Zanzibar. *Of Sea & Shore* 18(3):125-132, 9 unnumbered figs.

ALMASI, E.S. 1996. Palawan, beautiful to experience—difficult to travel. *Of Sea & Shore* 18(4):189-192, 3 unnumbered figs.

ALMASI, E.S. 1998. Solomon's treasure. *Of Sea & Shore* 21(1):9-14, 4 unnumbered figs.

ALMASI, E.S. 1998. Cuba! *Of Sea & Shore* 21(3):124-128, 146, 2 unnumbered figs.

\*AMITROV, O.V. 1994. Changes in composition of the gastropods in the western Eurasian seas at the Eocene-Oligocene boundary. *Paleontological Journal* 28(1):19-30, figs. 1-2.

ANDERSON, R.C. & J.A. MATHER. 1997. The shells of Gilligan's Island: Common mollusks found around Coconut Island, Oahu, Hawaii. *Of Sea & Shore* 20(2):77-82, figs. 1-4.

ANGIOY, M. 1995. New books: *Shells and Primitive Art* by T. Cossignani & G.T. Poppe. *La Conchiglia* 27(276):5.

ANONYMOUS. 1994. *Cypraea coronata* (Schilder, 1930). *American Conchologist* 22(4):14, 1 unnumbered fig.

ANONYMOUS. 1994. Finding elusive Hawaiian shells. *Hawaiian Shell News* 42(2):5.

ANONYMOUS. 1994. Recent finds. *Hawaiian Shell News* 42(7):9, 1 unnumbered fig.

ANONYMOUS. 1994. Shell fishing in the Visayas. *Hawaiian Shell News* 42(8):9, 1 unnumbered fig. [reprinted from *Asian Anglers' World*].

ANONYMOUS. 1994. *Simnia loebeckeana* [sic] (Weinkauff, 1881). *La Conchiglia* 26(270): cover fig.

ANONYMOUS. 1994. Errata-corrige: *Cypraea mappa* Linné, by Marquet & Martin. *La Conchiglia* 26(270):31, figs. 3-4.

ANONYMOUS. 1994. The cowry-quiz. *La Conchiglia* 26(270):61, 1 unnumbered fig.

ANONYMOUS. 1994. Selected conchology. *La*

*Conchiglia* 26(273):36, figs. 1-2.

ANONYMOUS. 1994. Shells on stamps. *Of Sea & Shore* 17(2):80-81, 1 unnumbered fig.

ANONYMOUS. 1994. Origin of the word cowry. *Of Sea & Shore* 17(2):117.

ANONYMOUS. 1994. Most spectacular malacological discovery of the last ten years. *Strandloper* 237:3.

ANONYMOUS. 1994. Cowries galore! *Strandloper* 237:10, 1 unnumbered fig.

ANONYMOUS. 1994. Red Sea cowries. *Strandloper* 238:6.

ANONYMOUS. 1994. More on *Chimaeria incomparabilis*. *Strandloper* 238:12, 1 unnumbered fig.

ANONYMOUS. 1994. Massive theft of sea shells in Europe. *Strandloper* 240:4.

ANONYMOUS. 1994. Nova species? *World Shells* 9:51, 1 unnumbered fig.

ANONYMOUS. 1995. News & notes. Unusual finding of two small cowries inside the sea anemones. *La Conchiglia* 27(274):45.

ANONYMOUS. 1995. Recently named marine Mollusca. *Of Sea & Shore* 17(4):226-231, figs. 1-15 + 7 unnumbered figs.

ANONYMOUS. 1996. *Cypraea (Zoila) lobettiana* L.R. Massilia, 1995. *Of Sea & Shore* 18(4):206-207, 4 unnumbered figs.

ANONYMOUS. 1996. Beach collecting at Shelly Beach, KwaZulu-Natal. *Strandloper* 246:8-9.

ANONYMOUS. 1997. Shells on stamps. *Of Sea & Shore* 19(4):199-200, 10 unnumbered figs.

ANONYMOUS. 1997. Recently described shelled marine mollusks. *Of Sea & Shore* 19(4):211-218, 13 unnumbered figs.

ANONYMOUS. 1997. Triviidae. *World Shells* 20: inside back cover, 2 unnumbered figs.

ANONYMOUS. 1997. Recently described shelled marine mollusks. *Of Sea & Shore* 20(3):147-154, 11 figs.

ANONYMOUS. 1997. A list of new South African species [compiled from the Vita Marina website on the internet]. *Strandloper* 250:4.

ANONYMOUS. 1997. Saying "*Cypraea*" out aloud! *Strandloper* 251:7, 2 unnumbered figs.

ANONYMOUS. 1997. Iconographic review. *World Shells*. 68-75, 104-111, 44 unnumbered figs.

ANONYMOUS. 1998. Recently described shelled marine mollusks. *Of Sea & Shore* 21(1):27-34, 15 unnumbered figs.

ANONYMOUS. 1998. Recently described shelled marine mollusks. *Of Sea & Shore* 21(2):87-94, 17 unnumbered figs.



- ANONYMOUS, 1999. Recently described shelled marine mollusks. *Of Sea & Shore* 22(1):27-34, 22 unnumbered figs.
- ANONYMOUS, 1999. [Shells on stamps]. *Of Sea & Shore* 22(2): front & back covers.
- ANONYMOUS, 1999. Recently described shelled marine mollusks. *Of Sea & Shore* 22(2):87-94, 27 unnumbered figs.
- \*ARNOLD, T.S. 1994. On a "problem" *Siphocypraea* Heilprin, 1887, from the Pliocene/Pleistocene of Florida. *The Festivus* 16(3):29-38, figs. 1-10.
- \*ARNOLD, T.S. 1995. The biogeographic significance of *Cypraea* (*Muracypraea*) in the Pliocene Imperial Formation of California [abstract]. *Western Society of Malacologists, Annual Report* 27:5, 8.
- \*ARNOLD, T.S. 1997. *Muracypraea henekeni* (Sowerby, 1850) in the Caribbean and Panama: One species or two? [abstract]. *Western Society of Malacologists Annual Report* 29:11.
- \*ARNOLD, T.S. 1997. *Muracypraea* in the proto-Gulf of California: A review of prior reports and a report of new discoveries [abstract]. *Western Society of Malacologists Annual Report* 29:11.
- \*ARNOLD, T.S. 1998. *Muracypraea* Woodring, 1957 (Gastropoda: Cypraeidae) in the upper Miocene and lower Pliocene Latraria Formation (Imperial Group) of Imperial County, southern California. *The Festivus* 30(8):89-93, figs. 1-7.
- \*ARNOLD, T.S. 1999. An exceptionally well preserved specimen of *Zoila* (*Gigantocypraea*) *gigas* (McCoy, 1867). *The Festivus* 31(9):101-102, figs. 1-3.
- BAKUS, G.J. 1994. Coral reef ecosystems. Oxford & IBH Publishing Company Pvt. Ltd.: New Delhi, India. v + 232 p., 21 figs.
- \*BANDEL K. & F. RIEDEL. 1994. Classification of fossil and Recent Calyptraeoida (Caenogastropoda) with a discussion on neomesogastropod phylogeny. *Berliner geowissenschaftliche Abhandlungen* (E)13:329-367, pls. 1-8.
- BARNETT, J.L. 1994. The recent phenomenon of worldwide damage to molluscs: Molluscs and areas involved and some possible causes. *Of Sea and Shore* 17(1):39-44, 9 unnumbered figs.
- BARCLAY, D. 1999. Cone wars. *American Conchologist* 27(4):28-30, 3 unnumbered figs.
- BARNETT, J.L. 1994. Unusual and abnormal molluscs of the Philippine Islands. *Hawaiian Shell News* 42(7):10-12, 3 unnumbered figs.
- BARNETT, J.L. 1997. Abnormal molluscs: III--India. *Of Sea & Shore* 20(1):20-25, figs. 1-9.
- BARNETT, J.L. & M.O. MONTILLA. 1994. Abnormal molluscs II: Philippine Islands. *Of Sea & Shore* 17(3):132-140, figs. 1-25.
- \*BASCILICI, G., E. MARTINETTO, G. PAVIA, & D. VIOLANTI. 1997. Paleoenvironmental evolution in the Pliocene marine-coastal succession of Val Chiusella (Ivrea, NW Italy). *Bollettino della Società Paleontologica Italiana* 36(1-2):23-52, figs. 1-9, pls. 1-4.
- BEALS, M. 1995. Cowries of Clipperton. *World Shells* 14:73-76, 6 unnumbered figs.
- BEALS, M. 1996. *Notadusta* species cf.--*Notadusta vicdani* Lan, 1985. *World Shells* 16:62-64, 8 unnumbered figs.
- BEALS, M. 1996. *Umbilia armeniaca* (Verco, 1812) [sic]: A western range extension. *World Shells* 17:72-73, figs. 1-5.
- BEALS, M. 1996. *Erronea fernandoi* Cate, 1969: A valid species. *World Shells* 18:49-53, figs. 1-10.
- BEALS, M. 1997. *Zoila rosselli edingeri*: A review of. *World Shells* 23:58-60, figs. 1-5.
- BEDULLI, D., G. SPADA, B. SABELLI, V. IACONO & C. MAGISTRALI. 1994. Censimento della malacofauna marina Italiana. 4. Elenco delle specie rinvenute nella regione Campania con indicazione del biotopo. *Notiziario Società Italiana di Malacologia*. 12(7-9):79-98 [Italian].
- BEGEMANN, U.-D. 1999. Umweltsch(m)utz der Phi Phi Inseln. *Club Conchylia* 31(1-2):60 [German].
- \*BIANUCCI, G., G. CANTALAMESSA, W. LANDINI, L. RAGAINI & G. VALLERI. 1997. Fossil mollusk association from Isabella Island (Galápagos, Ecuador). *Bollettino della Società Paleontologica Italiana* 36(1-2):277-281, figs. 1-4.
- BIASCA, C. 1997. Shelling in the Philippines. *Of Sea & Shore* 20(2):65-70, 5 unnumbered figs.
- BIRAGHI, G. 1994. A new guide to worldwide cowries. *La Conchiglia* 26(270):46-47.
- BIRAGHI, G. 1994. Again on *C. marginata*. *La Conchiglia* 26(271):52-54, figs. 1-5.
- BIRAGHI, G. 1994. "The Cowry" lives again! *La Conchiglia* 26(272):22-23.
- BIRAGHI, G. 1998. Review of *Kauris von Ostafrika* by F. Lorenz, Jr. *La Conchiglia* 30(288):7.
- BIRAGHI, G. 1999. In memoriam: Pat Burgess. *La Conchiglia* 30(290):10.
- BLÔCHER, M. 1997. Some shell-news from southwest Madagascar. *World Shells* 23:61-65, figs. A-H.
- BLÔCHER, M. & F. LORENZ. 1999. A new living species of Cypraeidae from southern Madagascar (Mollusca: Gastropoda: Cypraeidae). *Schriften zur*

Malakozoologie 13:13-15, fig. 1, pl. 3.

BOSCH, D.T., S.P. DANCE, R.G. MOOLENBEEK & P.G. OLIVER. 1995. Seashells of eastern Arabia. Motivate Publishing: London. 296 p., 1273 figs. + numerous unnumbered figs.

BOUCHET, P. 1995. Deep-water gastropods from New Caledonia. *La Conchiglia* 27(277):9-11, figs. 1-18.

BOUCHET, P. 1997. Inventorying the molluscan diversity of the world: What is our rate of progress? *The Veliger* 40(1):1-11, figs. 1-4.

BRADNER, H. 1994. New illustrations of *Cypraea radulae* [abstract]. Western Society of Malacologists Annual Report 26:13.

BRADNER, H. 1996. Radular comparison of *Cypraea bicolor* Gaskoin, 1849 and *C. piperita* Gray, 1829 [abstract]. Western Society of Malacologists, Annual Report 28:2.

BRADNER, H. & E.A. KAY. 1995. Techniques in preparing and photographing *Cypraea radulae*. *The Festivus* 27(8):96-103, figs. 1-6c.

\*BRADNER, H. & E.A. KAY. 1996. An atlas of cowrie radulae (Mollusca: Gastropoda: Cypraeoidea: Cypraeidae). *The Festivus* 28, Supplement, 179 p., 238 figs.

BRADNER, H. & E.A. KAY. 1997. Response to review by Christopher Meyer and Robert Guralnick of *An Atlas of Cowrie Radulae (Mollusca: Gastropoda: Cypraeoidea: Cypraeidae)*, volume 40(3):280. *The Veliger* 40(4):367.

BRADNER, H. & E.A. KAY. 1998. The radula of *Cypraeovula castanea*. *The Festivus* 30(5):57-58, figs. 1-2.

BRADNER, M. 1995. 1995 WSM meeting. *Hawaiian Shell News* 43(9):9, 1 unnumbered fig.

BRINK, D. 1995. The trawled shells of Kwazulu, Natal. *World Shells* 14:62-66, figs. 1-12c.

BRINK, D. 1997. *Phenacovolva honkakujiana* (Kuroda, 1928). *Strandloper* 250:1-3, 3 unnumbered figs.

BROWN, K. 1998. The other side of the coin. *The Strandloper*. 254:5, 2 unnumbered figs.

BRUIN, B. de. 1994. *Luponia fuscorubra* (Shaw, 1909), common species, yet rare. *World Shells* 11:39-41, figs. 1-7.

BUDDENHAGEN, A. 1997. Elbow Cay treasures. *American Conchologists* 25(3):4-8, 9 unnumbered figs.

BURCH, B.L. 1997. Review of *An atlas of cowrie radulae (Mollusca: Gastropoda: Cypraeoidea: Cypraeidae)* by Hugh Bradner & Alison Kay. *Electronic Hawaiian Shell News*, March 1997:10-13, 16 unnumbered figs.

BURCH, T.A. 1995. Fifty-five years of dredging. Part 5: Gulf of California. *Hawaiian Shell News* 43(6):4, 7,

figs. 1-10.

BURCH, T.A. 1995. Fifty-five years of dredging. Part 8: Chartering the *Janthina VIII*. *Hawaiian Shell News* 43(10):3-4, figs. 1-5.

BURGESS, C.M. 1994. *Cypraea ostergaardi* and *Cypraea thomasi*. *Hawaiian Shell News* 42(5):12, pl. 1.

BURGESS, C.M. 1995. Strangers in Hawaii. *Hawaiian Shell News* 43(8):1, 10, 12, figs. 1-7.

BUSSARAWIT, S. 1995. The market value of rare and common molluscs, Phuket Island, Thailand. *Phuket Island Biological Center Special Publication* 15:35-38.

BUSSARAWIT, S. 1995. Molluscs from the Marine National Parks: Surin and Le-Pae Islands, Andaman Sea, Thailand. *Phuket Marine Biological Center Special Publication* 15:119-125, fig. 1.

\*BUTLER, A. 1995. Shells are not what they seem to be. *Hawaiian Shell News* 43(6):11-12.

\*CAMPBELL, L.D., D.C. CAMPBELL & J.G. CARTER. 1995. Molluscs of the Natural Well locality, Duplin stratotype, near Magnolia, North Carolina and rediscovery of *Carinorbis quadricostata* (Emmons, 1858) (Gastropoda: Amathinidae). *Tulane Studies in Geology and Paleontology* 27(1/4):165-177, fig. 1, pl. 1.

\*CAMPBELL, M.R. & L.D. CAMPBELL. 1994. Preliminary biostratigraphy and molluscan fauna of the Goose Creek Limestone of eastern South Carolina. *Tulane Studies in Geology and Paleontology* 27(1-4):53-100, figs. 1-2, pls. 1-5.

CARDIN, C. 1994. A checklist of Ovulidae. *Of Sea & Shore* 17(2):99-106, 108.

CARDIN, C. 1994. From the Philippines a new "false cowry." *La Conchiglia* 26(272):40-41, figs. 1-3.

CARDIN, C. 1995. Cleaning shells. *Of Sea & Shore* 17(4):189-190.

CARDIN, C. 1997. A new false cowry from NW Africa: *Primovula (Adamantia) bellocaque* n.sp. *La Conchiglia* 29(285):24-25, figs. 1-2.

CATTERALL, C. 1998. Molluscs on coral reefs. In: Beesley, P.L., Ross, G.J.B., & Wells, A. (eds.), *Mollusca: The Southern Synthesis. Fauna of Australia* 5, part B. CSIRO Publishing: Melbourne, Australia. p. 33-36, figs. 1.27-1.36.

CARTERET, N. de 1994. A sheller's paradise, Naigani Island, Fiji. *Hawaiian Shell News* 42(3):5-6, 1 unnumbered fig.

CARTERET, N. de. 1995. *Cypraea aurantium*: A personal perspective. *World Shells* 12:70-72, figs. 1-2.

\*CERNOHORSKY, W.O. 1994. Age of *Bernaya chathamensis*. *The Cowry* n.s. 1(2):42.

CHANDLER, J. & C. DuROSS. 1997. A new *Zoila*



- discovered. *World Shells* 20:65-67, 2 unnumbered pls.
- CHANDLER, J. & C. DuROSS, 1997. *Zoila* and R.O.V.'s. *World Shells* 20:69-70, 3 unnumbered figs.
- \*CHANDLER, R. 1994. Neogene fossils of North Carolina: A field guide. The North Carolina Fossil Club, Inc.: Durham, North Carolina. 42 p., numerous unnumbered figs.
- \*CHANDLER, R. 1995. Cretaceous and Paleogene fossils of North Carolina: A field guide. The North Carolina Fossil Club, Inc.: Durham, North Carolina. 70 p., numerous unnumbered figs.
- CHIAPPONI, M. 1999. A conchological intermediate between *Cypraeovula edentula* and *C. algoensis* (Mollusca: Gastropoda: Cypraeidae). *Schriften zur Malakozoologie* 13:41-42, figs. 1-2.
- CLINE, J.R.S. 1998. "Easy beans and coconuts," The Cay Sal cruise, 11-18 July 1998. *American Conchologist* 26(3):7-9, 5 unnumbered figs.
- COLIN, P.L. & C. ARNESON. 1995. Tropical Pacific invertebrates. Coral Reef Press: Beverly Hills, California. vii + 296 p., 1354 figs. + numerous unnumbered figs.
- COLTRO, J. 1997. Brazilian seashells: An unexplored world. *American Conchologist* 25(1):9.
- COLTRO, J. 1997. The Brazilian connection: Do you really know about shells. *American Conchologist* 25(3):21.
- COLTRO, J. 1997. 15 years collecting around São Sebastião, São Paulo, Brazil. *American Conchologist* 25(4):7-11, 5 unnumbered figs.
- COLTRO, J., JR. 1998. Disaster area: El Niño is here! *American Conchologist* 26(1):9.
- COLTRO, J. 1998. The Brazilian connection: Let's go shelling in Brasil—Part I. *American Conchologist* 26(2):7-8, 5 unnumbered figs.
- COLTRO, J. 1998. The Brazilian connection: Let's go shelling in Brasil—Part II. *American Conchologist* 26(3):28-30, 9 unnumbered figs.
- [COMMITTEE FOR CELEBRATING DR. OKUTANI'S RETIREMENT]. 1996. Bibliography on the Malacological works of Dr. Takashi Okutani: 1955-1994. Tokyo University of Fisheries: Tokyo, Japan. 101 p., 9 pls.
- CORTIE, M. 1994. Update on *Cypraea fultoni* and *C. algoensis*. *Strandloper* 239:9.
- CORTIE, M. 1995. Some special South African cowries. *Strandloper* 242:4-8, figs. 1-16.
- CORTIE, M. 1996. Silly season for seashells. *Strandloper* 246:11.
- CORTIE, M. 1997. Riddle: What do *Chimaeria*, an opal and an albatross have in common? *Strandloper* 249:10-11, 4 unnumbered figs.
- CORTIE, M. 1997. Eastern Cape beach treasures. *Strandloper* 250:2-3, figs. a-b.
- CORTIE, M. & L. van den BERG. 1999. Shell power. *Strandloper* 257:9-12, 11 unnumbered figs.
- COSSIGNANI, T. & V. COSSIGNANI. 1997. Descrizione di tre nuove *Erato* (Gastropoda: Prosobranchia, Eratoidae). *Malacologia Mostra Mondiale* 24:17-18, 6 unnumbered figs. [Italian].
- COSTA, F.H.A. 1994. Albinism in Brazilian marine gastropods. *La Conchiglia* 26(272):24-28, figs. 1-13.
- COUET, H. G. de. 1994. Taking effective underwater photos. *Hawaiian Shell News* 42(1):1, 3-4, 2 unnumbered figs.
- CRAME, J.A. 1996. Evolution of high-latitude molluscan faunas. In: Taylor, J.D. (ed.), *Origin and Evolutionary Radiation of the Mollusca*, Chapter 10. Oxford University Press: London. p. 119-131, figs. 10.1-10.3.
- CRAMER, M. 1994. Southern tiger cowrie. *Australasian Shell News* 85/86:7, 1 unnumbered fig.
- CRUZ, R.A. 1996. Annotated checklist of marine molluscs collected during the R.V. *Victor Hensen* Costa Rica Expedition 1993/1994. *Revista de Biologia Tropical* 44, supplement 3:59-67.
- DAN, D. 1994. Shell show in Switzerland burglarized. *Hawaiian Shell News* 42(8):8.
- \*DARRAGH, T.A. & G.W. KENDRICK. 1994. Maastrichtian Scaphopoda and Gastropoda from the Miria Formation, Carnarvon Basin, northwestern Australia. *Records of the Western Australian Museum Supplement* 48:1-76, figs. 1-14.
- DAVIS, B. 1994. Shelling in the Sultanate. *Of Sea & Shore* 16(4):201-202.
- DAVIS, B. 1995. Hawaiian hospitality. *Hawaiian Shell News* 43:5, 1 unnumbered fig.
- DAVIS, B. 1996. Hawaiian hospitality. *Of Sea & Shore* 19(1):19.
- \*DAVIS, G.E. 1998. Systematic paleontology of a densely fossiliferous, upper Pliocene molluscan shell lens, 6th and Flower Streets, Los Angeles, California, with commentary on the stratigraphic nomenclature of the "Fernando Formation" [M.S. thesis]. California State University, Northridge. xvii + 235 p., 11 figs., 10 pls.
- DHARMA, B. 1994. Bay of Bengal shells in south Java. *Hawaiian Shell News* 42(3):11, 2 unnumbered figs.
- \*DIKOUA, M, J. LANG, B. LAURIN, A. PASCAL & M. SALARD-CHEBOLDAEFF. 1994. Biostratigraphy of some Maastrichtian and Paleocene



- formations in the Iullmmeden Basin(southern Niger). Neues Jahrbuch für Geologie und Paläontologie. Abhandlungen 193(1):55-79, figs. 1-12.
- \*DOLIN, L. 1996 [1997]. *Jenneria (Projenneria) eniwetokensis* subgen. nov., sp. nov.: A western Pacific new occurrence for the genus. *Cossmanniana* 4(1-2):20-24, figs. 1-10.
- \*DOLIN, L. 1998. Description de trois espèces nouvelles de Cypraeidae et de Triviidae (Mollusca: Gastropoda) du Miocène inférieur (Aquitainien) de Meilhan (Landes; France). *Cossmanniana* 5(3-4):103-108, figs. 1-13 [French with English abstract].
- DONEDDU, M. 1999. Some notes about range, habitat and ecology of the Mediterranean species of Cypraeidae. *The Festivus* 31(8):87-91, figs. 1-4.
- DONEDDU, M. & B. MANUNZA. 1994. *Palmadusta gracilis notata* (Gill, 1858). *La Conchiglia* 26(273):25-26, figs. 1-6.
- EDDIE, C., J. FERGUSON, L. FERGUSON & R. HOBSON. 1996. An updated list of the 'True cowries' (Family Cypraeidae) inhabiting Hervey Bay, Queensland. *Australasian Shell News* 91:2-3, 3 unnumbered figs.
- EDWARDS, A.L. 1994. The color of shells. *American Conchologist* 22(1):10-13, 9 unnumbered figs.
- \*ELDER, W.P., L.R. SAUL & C.L. POWELL, II. 1998. Late Cretaceous and Paleogene molluscan fossils of the Gualala Block and their paleogeographic implications. In: Elder, W.P. (ed.), *Geology and tectonics of the Gualala Block, northern California*. Pacific Section SEPM Guidebook 84:149-168, figs. 1-3, pl. 1.
- \*EL-NAHASS, H.A. 1997. Biostratigraphy of some Quaternary sequences of the Red Sea coastal plain of Egypt. *Neues Jahrbuch für Geologie und Paläontologie* 205(3):289-321, figs. 1-16.
- EMERSON, W.K. 1994. A zoogeographic summary of the marine mollusks of Clipperton Island (tropical eastern Pacific). *The Festivus* 26(6):62-71, fig. 1.
- \*EMERSON, W.K. & H.W. CHANEY. 1995. A zoogeographic review of the Cypraeidae (Mollusca: Gastropoda) occurring in the eastern Pacific Ocean. *The Veliger* 38(1):8-21, figs. 1-15.
- EMMENS, C.W. 1995. *Marine aquaria and miniature reefs*. T.F.H. Publications: Neptune, New Jersey. 317 p., numerous unnumbered figs.
- \*FALCONIERI, A. 1994. Genus *Syphocypraea* [sic] Heilprin, 1887. *World Shells* 11:83-90, 3 unnumbered figs.
- FEHSE, D. 1997. Einige korrektoren zu dem buch "A Guide to Worldwide Cowries" von Lorenz, F. & A. Huber [sic]. *Club Conchylia* 29(1-2):26 [German].
- FEHSE, D. 1997. A third *Pseudocyphoma* from the Caribbean Sea (Gastropoda: Ovulidae). *Schriften zur Malakozoologie* 10:35-37, pl. 11.
- \*FEHSE, D. 1997. Two new fossil *Siphocypraea* from Florida, U.S.A. *Schriften zur Malakozoologie* 10:38-44, pls. 12-13.
- FEHSE, D. 1998. Beiträge zur kenntnis der Triviidae (Mollusca: Gastropoda). 1. Die gattung *Trivirostra* von Western Samoa. *Club Conchylia* 30(4/6):39-67, pls. 1-9 [German].
- FEHSE, D. 1998. Anmerkungen zum "Schneckenführer Indopazifik." *Club Conchylia* 30(4/6):134 [German].
- FEHSE, D. 1999. A new species of *Trivirostra* from Mozambique (Mollusca: Triviidae). *La Conchiglia* 30(290):23-30, figs. 1-6, pl. 1.
- FEHSE, D. 1999. Contributions to the knowledge of the Triviidae (Mollusca: Gastropoda) III. A new species of *Cleotrivia* from western Africa. *Club Conchylia* 31(1-2):5-17, fig. 1, pls. 1-3.
- FINET, Y. 1994. The marine mollusks of the Galapagos Islands: A documented faunal list. Editions du Muséum d'Histoire Naturelle de Genève. 180 p.
- \*FINSLEY, C. 1996. *A Field Guide to Fossils of Texas*, 2nd edition. Gulf Publishing Company: Houston, Texas. xi + 211 p., 40 figs. 112 pls.
- FISCHER, W. 1999. Malako-numismatic--Mollusken auf Münzen (1). *Club Conchylia* 31(1-2):53-58, numerous unnumbered figs.
- FLETCHER, R. 1994. State of the phylum Mollusca report. *Hawaiian Shell News* 42(3):7, 5 unnumbered figs.
- FOGLINO, H. 1998. Sea shells, evolved for survival. *American Conchologist* 26(2):9-13, figs.1-11.
- FORK, S.K. 1997. Studies on development and feeding habits of the Chestnut Cowrie (*Cypraea spadicea*) [abstract]. *Western Society of Malacologists Annual Report* 29:16.
- FREEMAN, D. 1999. Review of *Marine Shells of South Africa* by D.G. Steyn & M. Lussi. *Strandloper* 259:10-12, 1 unnumbered fig.
- FRETTER, V. & A. GRAHAM. 1994. *British Prosobranch Molluscs: Their Functional Anatomy and Ecology*. Revised and updated edition. The Ray Society: London. xix + 820 p., 343 figs.
- GARCÍA, E. 1994. Shelling in Samoa. *American Conchologist* 22(1):16-18, 9 unnumbered figs.
- \*GARVIE, C.L. 1996. The molluscan macrofauna of the Reklaw Formation, Marquez Member (Eocene: lower Claibornian), in Texas. *Bulletins of American Paleontology* 111(252): 1-177, figs. 1-6, pls. 1-23.
- GHYOOT, J.E. 1999. Some comments on India's shells. *Of Sea & Shore* 22(1):36-37, 2 unnumbered figs.

- GOLIKOV, A.N. 1995. Shell-bearing gastropods of the Arctic. Colus Press: Moscow, Russia, 108 p., 139 figs.
- GONZÁLEZ, N.E. 1998. Moluscos de la expedición del R/V *Edwin Link* en las costas del Caribe Mexicano. *Revista de Biología Tropical* 46(3):625-631 [Spanish with English abstract].
- GOODWIN, H.W. 1997. Conchological characterization in *Cypraea teres* and *C. alisonae* (Gastropoda: Cypraeidae) using mathematical parameters as a method of species identification. *Of Sea & Shore* 20(1):51-56, figs. 1-2.
- GOSLINER, T. M. 1994. Review of *Australian Marine Shells, Prosobranch Gastropods, Part one* by B. Wilson. *The Festivus* 26(3):39 [reprinted in *Hawaiian Shell News* 42(8):11].
- GOSLINER, T.M. 1997. Adaptive radiation of the Ovulidae: Feeding and body color [abstract]. *Western Society of Malacologists Annual Report* 29:12.
- GOSLINER, T.M., D.W. BEHRENS & G.C. WILLIAMS. 1996. Coral Reef Animals of the Indo-Pacific. *Sea Challengers: Monterey, California*. 314 p., 6 figs., 1103 pls.
- GOTO, Y. & G.T. POPPE. 1996. A listing of living Mollusca. Part II, Volume 1. *L'Informatore Picensi*: Ancona, Italy. 520 p.
- GOTSHALL, D.W. 1994. Guide to Marine Invertebrates: Alaska to Baja California. *Sea Challengers: Monterey, California*. vi + 105 p., 253 figs. + 24 unnumbered figs.
- GROENWALD, J. 1994. Shell stamps for South Africa. *Strandloper* 239:5.
- GROTE, M.H. 1997. Determining *Trivia calvariola*. *The Strandloper* 249:1, 2 unnumbered figs.
- GROTE, M.H. 1997. *Trivia sanctispiritus*: A collector's item. *Strandloper* 250:2-3, 2 unnumbered figs.
- GROVES, L.T. 1994. Review of *A Guide to Worldwide Cowries* by Felix Lorenz, Jr. and Alex Hubert. *The Festivus* 26(4):46.
- \*GROVES, L.T. 1994. Catalog of fossil and Recent Cypraeidae and Eocypraeinae (Ovulidae) described since 1971. *The Cowrie n.s.* 1(1):5-16.
- \*GROVES, L.T. 1994. New species of Cypraeidae (Mollusca: Gastropoda) from the Miocene of California and the Eocene of Washington. *The Veliger* 37(3):244-252, figs. 1-13 [reprinted in the *Bulletin of the Southern California Paleontological Society* 26(9-10):79-87].
- \*GROVES, L.T. 1994. Jurassic and Cretaceous cypraeacean biogeography and paleontology with an annotated list of the species. *The Cowrie n.s.* 1(2):25-41, figs 1-20.
- GROVES, L.T. 1994. Cypraeacean and triviacean references 1971-1993. *The Cowrie n.s.*, v. 1 Supplement, 38 p.
- \*GROVES, L.T. 1995. Jurassic and Cretaceous biogeography of the superfamily Cypraeoidea [abstract]. *Western Society of Malacologists, Annual Report* 27:5.
- \*GROVES, L.T. 1997. Fossil and Recent species of eastern Pacific Cypraeacea (Cypraeidae and Eocypraeinae [Ovulidae]): An update [extended abstract]. *Western Society of Malacologists Annual Report* 29:7-10.
- \*GROVES, L.T. 1997. A review of cypraeiform gastropods from Neogene strata of northwestern Ecuador with the description of two new species. *Tulane Studies in Geology and Paleontology* 30(3):147-157, fig. 1, pl. 1.
- GROVES, L.T. 1998. Review of *A Guide to Worldwide Cowries* by Felix Lorenz, Jr. and Alex Hubert. *American Conchologist* 26(1):11.
- \*GROVES, L.T. 1998. The cypraeid genus *Muracypraea* Woodring, 1957 (Mollusca: Gastropoda) in the Caribbean and adjacent regions: How many species are there and what is *Muracypraea henekeni* (Sowerby, 1850)? [abstract]. *PaleoBios* 18(3), supplement, p. 3.
- \*GROVES, L.T. & R.L. SQUIRES. 1995. First report of the genus *Proadusta* Sacco, 1894 (Gastropoda: Cypraeidae) from the Western Hemisphere, with a description of a new species. *The Nautilus* 109(4):113-116, figs. 1-5.
- HABE, T. & Y. INABA. 1996. A catalogue of the shellfish type specimens described by the late Dr. Tokubei in the possession of Nishinomiya City. Privately published: Nishinomiya City, Japan. 152 p., 43 pls.
- HABE, T. & Y. INABA. 1997. Catalogue of the shellfish type specimens described by the late Dr. Tokubei Kuroda except the possession of Nishinomiya City. Privately published: Nishinomiya City, Japan. 61 p.
- HARDY, B. 1994. Some marginal shelling in the mid-Pacific. *Of Sea & Shore* 17(1):4-6, 47-48, 4 unnumbered figs.
- HART, M. 1994. *Phenacovolva birostris* Linnaeus, 1767. The second ovulid found in New Zealand. *World Shells* 8:39, 2 unnumbered figs.
- HART, M. 1995. Melanistic & rostrate cowries of northern Queensland, Australia. *World Shells* 15:63-71, figs. 3-43.
- HART, M.R. 1996. New species of *Trivia* and *Erato*



- (Gastropoda: Triviidae) from northern New Zealand waters. *La Conchiglia* 28(279):37-39, figs. 1-6.
- HART, M. 1997. South African dwarf cowries. *World Shells* 23:36, figs. 1-4.
- HART, M. 1997. *Zoila venusta orientalis* Raybaudi, 1990. *World Shells* 23:37-39, 5 unnumbered figs.
- HART, M. 1997. *Erronea vredenburgi* Schilder, 1927: A range extension into Australia. *World Shells* 23:51, figs. 1-2.
- HART, M. 1997. South African *Cypraeovula* in the spotlight. *World Shells* 23:52-53, 1 unnumbered fig.
- HASEGAWA, K. & H. SAITO. 1995. Illustrations and annotated checklist of the molluscan type specimens contained in the Sakurai Collection in the National Science Museum, Tokyo. National Science Museum: Tokyo, Japan, 55 p., 7 pls.
- HAYES, B. 1994. *Cypraeovula* in Algoa Bay, S. Africa. *World Shells* 11:48-49, figs. 1-3.
- HAYES, B. 1995. The living animal of *Crossia iutus* Shikama, 1974. *World Shells* 15:4-5, figs. 1-5.
- HAYES, B. 1996. *Cypraeovula coronata gabriellii* Lorenz, 1993 from the eastern Cape, South Africa. *World Shells* 16:54-55, figs. 1-4.
- HAYES, B. 1997. *Trivia sanctispiritus* Shikama, 1974, variation in from South Africa. *World Shells* 20:43-44, figs. 1-2.
- HEALY, J.M. 1994. Review of *Australian Marine Shells (Marine Prosobranchs, Volume 1)* by Barry Wilson. *Australasian Shell News* 87:5.
- HEALY, J.M. 1996. Molluscan sperm ultrastructure: Correlation with taxonomic units within the Gastropoda, Cephalopoda and Bivalvia. In: Taylor, J.D. (ed.), *Origin and Evolutionary Radiation of the Mollusca*, Chapter 8. Oxford University Press: London. p. 99-113, figs. 8.1-8.3.
- HEDEGAARD, C. & C.P. MEYER. 1997. Schilder revisited [abstract]. *Western Society of Malacologists Annual Report* 29:11.
- HEIMAN, E. 1998. Statistical study of cowries from the Sinai area of the Red Sea. *La Conchiglia* 30(287):11-14, figs. 1-5.
- HEIMAN, E. 1998. *Erosaria turdus* Lamarck, 1810 in the Sinai area of the Gulf of Aqaba. *La Conchiglia* 30(289):23-33, 62, figs. 1-34.
- HEIMAN, E. 1999. An expansion of the distribution range of *C. arabica immanis*? *La Conchiglia* 30(290):55-56, figs. 1-4.
- HEIMAN, E.L. 1999. A guide to cowry names and terms. Privately published: Rehovot, Israel. 84 p.
- HEIMAN, E. & H.K. MIENIS. 1999. *Lyncina camelopardalis sharmiensis* n.ssp. from the east coast of Sinai, Red Sea (Gastropoda: Prosobranchia: Cypraeidae: Cypraeinae). *La Conchiglia* 30(290):39-42, 56, figs. 1-8 + 1 unnumbered fig.
- HEIMAN, E. & H.K. MIENIS. 1999. *Erosaria nebrites nebrites* Melvill, 1888 from the east coast of Sinai (Gulf of Aqaba and northern Red Sea). *La Conchiglia* 30(291):27-35, figs. 1-19.
- HEMMES, D.E. & M.J. GOLDSMITH. 1994. The Richert collection finds a home in Hilo, Hawaii. *Hawaiian Shell News* 42(8):1, 4-5, 7 unnumbered figs.
- HEMMES, D.E. & M.J. GOLDSMITH. 1994. Shell collections located on the Big Island: The Shimizu collection. *Hawaiian Shell News* 42(10):12, 2 unnumbered figs.
- HEMMES, D.E. & B.N. TISSOT. 1995. Ultrastructural aspects of the mantle of cowries as seen by transmission electron microscopy: The mantle edge [abstract of poster]. *American Malacological Union, Program and Abstracts*, p. 29.
- HENDRICKX, M.E. & A. TOLEDANO GRANADOS. 1994. Catalogo de moluscos: Colección de Referencia Estación Mazatlán, ICML, UNAM. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México. xvi + 71 p. [Spanish].
- HICKMAN, C.S. 1999. Adaptive function of gastropod larval shell features. *Invertebrate Biology* 118(4):346-356, figs. 1-21.
- HIGA, L. 1994. Hawaiian shell collection sold. *Hawaiian Shell News* 42(12):8, 1 unnumbered fig.
- HIGO, S., P. CALLOMON & Y. GOTÔ. 1999. Catalogue and bibliography of the marine shell-bearing Mollusca of Japan. Elle Scientific Publications: Osaka, Japan. 749 p.
- HILL, L. 1995. The world's most beautiful sea shells. Carmichael Publications: Tampa, Florida. 240 p., numerous unnumbered figs.
- HØISAETER, T. 1998. Preliminary check-list of the marine, shelled gastropods (Mollusca) of Golfo de Dulce, on the Pacific coast of Costa Rica. *Revista de Biología Tropical, Supplement* 6:263-270.
- HOLZER, E. 1995. More finds of *Cypraea ziczac* and *Cypraea gracilis* in the Dahab area. *Levantina* 82:13.
- HORI, S., E. TSUCHIDA, A. GÔ, & K. NAKAGUCHI. 1999. A record of *Crenavolva (Cuspidolva) mucronata* Azuma & Cate from 240-302 m deep off Amami-Oshima Island. *Chiribotan* 30(2):27-31, figs. 1-4 [Japanese with English abstract].
- HOSAKA, K.-I., T. IRIE, & T. SUGIMURA. 1997.



The family Cypraeidae (Caenogastropoda) of Yamaguchi Prefecture, western Japan. The Yuriyagai 5(1/2):127-183, figs. 1-10.

HUBERT, A. 1994. *Zoila marginata* (Gaskoin, 1848) and the proper names of its subspecies. La Conchiglia 26(271):49-51, fig. A.

HUBERT, A. 1995. Cowries in discussion. Some arguments responding to contributions in World Shells no. 9. World Shells 13:101-103.

HUTSELL, K.C., L.L. HUTSELL & D.L. PISOR. 1997. Registry of World Record Size Shells. Snail's Pace Productions: San Diego, California. 101 p.

IKEDA, H. 1995. Cowries of the Miura Peninsula (1). Hayama Shiosai Museum: Hayama, Japan. 32 p., numerous unnumbered figs., 22 pls. [Japanese].

IKEDA, H. 1996. Cowries of the Miura Peninsula (2). Hayama Shiosai Museum: Hayama, Japan. 32 p., numerous unnumbered figs., 22 pls. [Japanese].

IKEDA, H. 1998. *Notadusta omii*, a new cowry (Gastropoda: Cypraeidae) from Japan with a review of *Notadusta katsuae* and *N. musumea*. Venus 57(4):259-269, figs. 1-3, pl. 1.

\*INOUE, K., T. OZAWA., T. NOBUHARA, T. & S. TOMIDA. 1997. Reexamination of the Sagara Fauna—Middle Miocene molluscan assemblage from the Sugaya Formation, Sagara Group, Shizuoka Prefecture, Central Japan. Paleontological Research 1(2):110-125, figs. 1-5.

\*INZANI, A. 1995. The Cypraeidae family in the Italian Pliocene. World Shells 12:41-45, pls. 1-2.

\*INZANI, A. 1995. The Cypraeidae family in the Italian Pliocene. World Shells 13:120-123, pl. 3.

IRIE, T. 1997. Relationships between geographic variation of shell structure and water temperature in *Cypraea caputserpentis* (Gastropoda: Cypraeidae). The Yuriyagai 5(1/2):17-29, figs. 1-9.

\*JEFFREY, P. & S. TRACEY. 1997. The early Eocene London Clay Formation mollusc fauna of the former Bursledon Brickworks, Lower Swanwick, Hampshire. Tertiary Research 17(3+4):75-137, fig. 1, pls. 1-15.

\*JELL, P.A. & T.A. DARRAGH. 1998. The Fossil Record. In: Beesley, P.L., Ross, G.J.B., & Wells, A. (eds.), Mollusca: The Southern Synthesis. Fauna of Australia 5, part B. CSIRO Publishing: Melbourne, Australia. p. 88-101, figs. 1.95-1.101.

JOHNSON, R.I. 1994. Types of shelled Indo-Pacific mollusks described by W.H. Pease. Bulletin of the Museum of Comparative Zoology 154(1):1-61, pls. 1-10.

JUVIGNY, G. 1996. *Erosaria (Ravitriona) caputserpentis* (Linné, 1758): A discovery off Tuamotu Islands. World

Shells 17:92, 4 unnumbered figs.

KAISER, K.L. 1997. The Recent molluscan marine fauna of the Islas Galápagos. The Festivus 29, supplement, 67 p.

KAISER, K.L. 1998. *Cypraea talpa* on eggs and a live *Cymatium (Gutturnium) muricinum*, both at Isla del Coco, Costa Rica. The Festivus 30(2):28-29, pl. 1.

KAISER, K.L. 1999. *Mauritia scurra* (Gmelin, 1791) (Gastropoda: Cypraeidae) on eggs at L'Île Clipperton [France], tropical eastern Pacific. The Festivus 31(3):41-42, figs. 1-3.

KALIGIS, G.J.F. 1995. Marine molluscs collected at Dulupi and Limba Islands, north Sulawesi, Indonesia [abstract]. Phuket Marine Biological Center Special Publication 15:226.

KAY, E.A. 1995. Pacific Island marine mollusks: Systematics. In: Marangos, J.E. and others (eds.), Marine Coastal Biodiversity in the Tropical Island Pacific Region. V. 1. Species Systematics and Information Management Priorities. Chapter 8, p. 135-159.

\*KAY, E.A. 1996. Evolutionary radiations in the Cypraeidae. In: Taylor, J.D. (ed.), Origin and Evolutionary Radiation of the Mollusca, Chapter 18. Oxford University Press: London. p. 211-220, figs. 18.1-18.5.

\*KAY, E.A. 1998. Neogene Cypraeidae (Gastropoda) of the northern Dominican Republic [abstract]. In: Bieler, R. & Mikkelsen, P.M. (eds.), Abstracts of the World Congress of Malacology, p. 174.

KAY, E.A. & H. BRADNER, 1997. A new examination of *Cypraea* genera classification [abstract]. Western Society of Malacologists Annual Report 29:12.

KILBURN, R.N. 1995. H.W. Bell-Marley, pioneer South African collector. Strandloper 242:11.

KILBURN, R.N. & J. HYLLBERG. 1998. Gastropods and bivalves from Thailand; with taxonomic notes and new records. Phuket Marine Biological Center Special Publication 18(2):311-316.

\*KOHN, A.J. & I. ARUA. 1999. An early Pleistocene molluscan assemblage from Fiji: Gastropod faunal composition, paleoecology and biogeography. Palaeogeography, Palaeoclimatology, Palaeoecology 146:99-145, figs. 1-9, pls. 1-4.

KORKOS, D. 1994. *Cypraea pantherina* found at Nuweiba. Levantina 80:4.

KORKOS, D. 1994. Anemones feeding on small *Cypraea*. Levantina 80:14.

\*KOWALKE, T. 1998. Bewertung protoconchmorphologischer daten basaler

- Caenogastropoda (Cerithiimorpha und Littorinimorpha) hinsichtlich ihrer systematik und evolution von der Kreide bis Rezent. Berliner Geowissenschaftliche Abhandlungen, Ser. E, 27:1-119, figs. 1-13, pls. 1-10 [German].
- KROMMENHOEK, W. 1994. Beach-collecting cowries: Possibilities and limitations. *The Cowry* n.s. 1(1):17-22, fig. 1.
- KROMMENHOEK, W. 1994. Cowries from Java, Indonesia. *Of Sea & Shore* 17(2):107-108.
- KROMMENHOEK, W. 1994. Beach-collecting cowries: Observations from the field. *The Cowry* n.s. 1(2):43-48.
- KROMMENHOEK, W. 1995. How cowries lose their shine. *Of Sea & Shore* 17(4):191-192, 2 unnumbered figs.
- KROMMENHOEK, W. 1995. Strange perforations in a cowry shell. *Of Sea & Shore* 17(4): 196, 2 unnumbered figs.
- KROMMENHOEK, W. 1996. Ecograms of beach found cowries. *Of Sea & Shore* 18(4):213-214.
- KROMMENHOEK, W. 1996. Size distribution in beach-found populations of six *Cypraea* species in Indonesia & the Seychelles. *Of Sea & Shore* 18(4):225-226.
- KROMMENHOEK, W. 1996. A discussion of the validity of some *Cypraea* species. *Of Sea & Shore* 18(4):227-229.
- KROMMENHOEK, W. 1996. More about size distribution of Indo-West Pacific cowries. *Of Sea & Shore* 18(4):229-230.
- KROMMENHOEK, W. 1996. About *Cypraea kieneri* Hidalgo, 1906, *C. hirundo* L., 1758 & *C. ursellus* Gmelin, 1791. *Of Sea & Shore* 18(4):230-232, fig. 1.
- KROMMENHOEK, W. 1996. Variability in *Cypraea asellus* Linné, 1758. *Of Sea & Shore* 19(1):13-14, 20.
- KROMMENHOEK, W. 1996. Variability in *Cypraea carneola* Linné, 1758 and *Cypraea interrupta* Gray, 1824. *Of Sea & Shore* 19(1):51-53.
- KROMMENHOEK, W. 1996. Size-distribution in gastropods & bivalves. *Of Sea & Shore* 19(2):89-91, figs. 1-4.
- KROMMENHOEK, W. 1996. About growth patterns in gastropods and bivalves. *Of Sea & Shore* 19(2):114-116, figs. 1-4.
- KROMMENHOEK, W. 1996. Beach found cowries in Sri Lanka II. *Of Sea & Shore* 19(3):159-160.
- KROMMENHOEK, W. 1997. Statistical analysis of size differences in beach-found cowries along the Indian Ocean. *Of Sea & Shore* 19(4):197-198.
- KROMMENHOEK, W. 1997. The rate of erosion of washed-up cowries. *Of Sea & Shore* 19(4):223-224.
- KROMMENHOEK, W. 1997. Variability in dorsal spots in *Cypraea boivini* Kiener, 1843, *C. gangranosa* Dillwyn, 1817 & *C. ocellata* Linné, 1758. *Of Sea & Shore* 20(1):9-10.
- KROMMENHOEK, W. 1997. Twenty years of beach collecting: A survey. *Of Sea & Shore* 20(1):45-49.
- KROMMENHOEK, W. 1997. Additional information about size-distribution for *Cypraea lynx* Linné, 1758 & *C. caputserpentis* Linné, 1758 from Bali, Indonesia. *Of Sea & Shore* 20(2):86.
- KROMMENHOEK, W. 1997. Detection of coral reef destruction by studying the washed-up molluscan diversity. *Of Sea & Shore* 20(2):96-98.
- KROMMENHOEK, W. 1998. Beach found cowries in India. *Of Sea & Shore* 21(1):15-16, 2 unnumbered figs.
- KROMMENHOEK, W. 1998. A comparison of beach-found specimens of *Cypraea ocellata* Linné from Sri Lanka and south India. *Of Sea & Shore* 21(2):83-86, [82], figs. 1-3.
- KROMMENHOEK, W. 1998. Beach distribution of cowries. *Of Sea & Shore* 21(2):113-114.
- KROMMENHOEK, W. 1998. A comparison of beach-found specimens of *Cypraea gracilis* Gaskoin, 1849 from Sri Lanka and Java and also of *Cypraea kieneri* Hidalgo, 1906 from the Seychelles and Java. *Of Sea & Shore* 21(3):129-130.
- KROMMENHOEK, W. 1998. About size differences on beach-found shell assemblages of 17 cowry species in the Indian Ocean region. *Of Sea & Shore* 21(3):154-160, figs. 1-4.
- KROMMENHOEK, W. 1999. Variability and taxonomy in Cypraeidae. *Of Sea & Shore* 21(4):221-226, 234.
- KURTZ, I. 1997. Thailand: Auf den Muschelsammler läßt es lächeln. *Club Conchylia* 29(1/2):61-70, 17 unnumbered figs. [German].
- KURTZ, I. 1998. Zwei "Muschelsammler" in Ägypten. *Club Conchylia* 30(4/6):115-128, 22 unnumbered figs. [German].
- KURTZ, I. 1999. Sammeln in Sri Lanka. *Club Conchylia* 31(1-2):61-64 [German].
- LAMBERTON, C. 1994. A checklist of the marine shells of Ambergris Caye, Belize. *American Conchologist* 22(2):12-13.
- LAMPRELL, K. 1998. Queensland deepwater molluscs. *Australasian Shell News* 99/100:5.
- LAN, T.C. 1994. Correct locality data on some important shells originating from Taiwan. *World Shells* 9:112-114.
- LAN, T.C. 1997. Exact locality of *Luria tessellata lani* Raybaudi. *World Shells* 23:17-19, 5 unnumbered figs.
- LATAMA, G. 1995. Utilization of shell resources in the Spermonde Archipelago, Indonesia. *Phuket Marine*



- Biological Center Special Publication 15:31-33, fig. 1.
- LATAMA, G. & M.N. NESSA. 1994. Gastropod distribution and abundance around Kodingareng Keke Island, south Sulawesi, Indonesia. Phuket Marine Biological Center, Special Publication 13:163-165, figs. 1-2.
- LEAL, J.H. 1996-1997. Thou shell not steal. The Bailey-Matthews Shell Museum Newsletter. 38: 1 unnumbered p., 1 unnumbered fig.
- LEE, J.-J. & J.-M. HYUN, 1998. Spatial species diversity of benthic macroinvertebrates on the intertidal zone of Chujado, Cheju Islands. Korean Journal of Malacology 13(1):71-90, figs. 1-6.
- LEE, N. & P. DUNCAN. 1999. Shellebrities. Australasian Shell News 103:7, 5 unnumbered figs.
- \*Le RENARD, J. 1994. Révision des mollusques Paléogènes du Bassin de Paris I. Rectifications de nomenclature d'espèces. Cossmanniana 3(2):35-40 [French with English abstract].
- \*Le RENARD, J. 1997 [1998]. Révision des mollusques Paléogènes du Bassin de Paris VI. Liste des genres typifiés des espèces de Cete Provenance. Cossmanniana 5(1-2):29-56 [French with English abstract].
- \*Le RENARD, J. & J.-M. PACAUD. 1995. Révision des mollusques Paléogènes du Bassin de Paris II. Liste des références primaires de espèces. Cossmanniana 3(3):65-132 [French with English abstract].
- \*Le RENARD, J. & J.-M. PACAUD. 1996 [1997]. Révision mollusques Paléogènes du Bassin de Paris V. Commentaires sur l'index général des espèces. Cossmanniana 4(1-2):25-28 [French].
- LILTVED, W.R. & V.G. MILLARD, 1994. A new *Trivia* (Triviidae) and *Prionovolva* (Ovulidae) from southern Africa (Gastropoda: Prosobranchia). World Shells 11:3-8, figs. 1-9.
- LINDER, G. 1994. Muscheln und Schnecken der Weltmeere. BLV Bestimmungsbuch: München, Germany. 256 p., numerous unnumbered figs., 64 pls. [German].
- LITAAY, M. 1994. Gastropods encountered on a reef flat at Samalona Island, south-west Sulawesi, Indonesia. Phuket Marine Biological Center, Special Publication 13:157-158.
- LOBETTI BODONI, F. 1994. *Erronea hungerfordi* Sowerby, 1888; *Erronea hungerfordi coucomi* Schilder, 1965. World Shells 11:57-59, figs. 1-6.
- LORENZ, F., Jr. 1994. The Ovulidae from Tanzania. World Shells 8:80-82, figs. 1-8.
- \*LORENZ, F., Jr. 1994. From Tanzania subfossil specimens of *Cribrarula* sp. La Conchiglia 26(271):19-17, fig. B, pl. 1.
- LORENZ, F. Jr. 1994. A peculiarity in the shell morphology of *Ipsa childreni*. World Shells 9:13-16, figs. 1-10.
- LORENZ, F., Jr. 1994. From South Africa: *Trivia debuini* n.sp. (Gastropoda, Triviidae). La Conchiglia 26(273):8-9, figs. 1-4.
- LORENZ, F., Jr. 1995. *Bistolida owenii vasta* in Tanzania. La Conchiglia 27(276): 54-55, 3 unnumbered figs.
- LORENZ, F., Jr. 1995. News about a poorly known cowry: *Cribrarula taitae* (Burgess, 1993). World Shells 15:78-79, 4 unnumbered figs.
- LORENZ, F., Jr. 1996. A new species of Triviidae from the Philippine waters. La Conchiglia 28(279):50-52, figs. 1-5.
- \*LORENZ, F., Jr. 1996. Gründe für die Vielfalt. Club Conchylia 28(5-6):44-61, figs. 1-38 [German].
- LORENZ, F. 1996. Der Kegel und der Setzkasten-- Gedanken zum Thema *Conus*-systematik. Club Conchylia 28(5-6):55-61, figs. 1-6 [German].
- LORENZ, F. 1996. Gründe die Vielfalt, ein Nachtrag. Die schönen neuen Kauris. Club Conchylia 28(5-6):62-63 [German].
- LORENZ, F. 1997. A new subspecies of *Cribrarula cribraria* from Sri Lanka (Gastropoda: Cypræidae). Schriften zur Malakozoologie 10:1-3, pl. 1.
- LORENZ, F. 1997. Eine neue, der Ringkauri *Erosaria annulus* morphologisch ähnliche Art von West Samoa. Schriften zur Malakozoologie 10:11-14, figs. 1-2, pl. 5 [German].
- LORENZ, F. 1997. Nickel in *Errones erronea* (Gastropoda: Cypræidae) von Nouméa. Schriften zur Malakozoologie 10:20 [German].
- LORENZ, F. 1997. A critical look at the use of the name *menkeana* Deshayes, 1863. World Shells 21:22:87-88, figs. 1-3.
- LORENZ, F., Jr. 1997. *Barycpraea fultoni fultoni*: A remarkable specimen. La Conchiglia 29(285):58, 2 unnumbered figs.
- \*LORENZ, F. 1998. Kauris von Ostafrika. Schriften zur Malakozoologie 11:1-150, figs. 1-121, pls. 1-26 [German].
- LORENZ, F. 1998. Something unusual, *Cypræovula* sp. cf. *castanea*. La Conchiglia 30(286):50, 2 unnumbered figs.
- LORENZ, F., Jr. 1998. A portrait: Two closely related deep water cowries. La Conchiglia 30(286):55, 4 unnumbered figs.
- LORENZ, F., Jr. 1998. *Erronea succincta adusta*. La Conchiglia 30(186):58, 1 unnumbered fig.
- LORENZ, F., Jr. 1998. That cowry-quiz again... La



Conchiglia 30(286):58, 2 unnumbered figs.

LORENZ, F. 1999. A western subspecies of *Lyncina leucodon* (Broderip, 1832) (Mollusca: Gastropoda: Cypraeidae). *Schriften zur Malakozoologie* 13:16-18, pl. 4.

LORENZ, F. 1999. Another new species of Cypraeidae from Madagascar (Mollusca: Gastropoda: Cypraeidae). *Schriften zur Malakozoologie* 13:37-40, pl. 8.5.

\*LORENZ F. 1999. Eine Pliozäne *Mauritia* aus Tansania (Gastropoda: Cypraeidae). *Schriften zur Malakozoologie* 13:57-59, pl. 11 [German].

\*LORENZ, F., Jr. & K. GROH. 1998. Five new species of Cypraeidae from the middle Miocene ("Vindobonian") of Porto Santo, Madeira Archipelago. *Archiv für Molluskenkunde* 127(1/2):107-114, figs. 1-7.

LORENZ, F. & G. STERBA. 1999. *Purpuradusta oryzaeformia* sp. nov. (Mollusca: Gastropoda: Cypraeidae): An overlooked species in the family Cypraeidae. *Schriften zur Malakozoologie* 13:3-8, pl. 1.

\*LOZOUET, P. & L. DOLIN. 1997. A new upper Oligocene cypraeoid fauna from the Adour Basin (southwestern France): An evolutionary perspective [abstract]. *Western Society of Malacologists Annual Report* 29:6-7.

\*LUDVIGSEN, R. & G. BEARD. 1994. *West Coast Fossils: A guide to the ancient life of Vancouver Island*. Whitecap Press: Vancouver, British Columbia, Canada: xii + 194 p., 130 figs.

\*LUDVIGSEN, R. & G. BEARD. 1997. *West Coast Fossils: A Guide to the Ancient Life of Vancouver Island*, Revised ed. Harbour Publishing Co.: Vancouver, British Columbia, Canada: xii + 216 p., 157 figs.

LUKE, S.R. 1995. Catalog of the benthic invertebrate collections of the Scripps Institution of Oceanography. *Mollusca. SIO Reference Series* 95-24: vii + 167 p.

LUTZ, G. 1995. Allied cowries of south east Queensland. *Australasian Shell News* 50: 1-2, 38 unnumbered figs.

MA, X. 1997. *Fauna Sinica: Superfamily Cypraeacea*. Science Press: Beijing China. viii + 283 p., figs. 1-96, pls. 1-12 [Chinese with English abstract, keys, and new taxa descriptions].

\*MARCOMINI, J.-L. 1994. La collection Léon Silvestre de Sacy (1867-1928). *Cossmanniana* 3(1):13-29, figs. 1-40 [French].

MARQUET, J. 1994. Guide to worldwide cowries: Consideration about a beautiful book. *World Shells* 9:82-85.

\*MARQUET, P. 1997. Pliocene gastropod faunas from Kallo (Oost-Vlaanderen, Belgium) -- Part 3. *Caenogastropoda: Aporrhaidae to Muricidae*, and Part 4. *Buccinidae to Helicidae*. *Contributions to Tertiary and*

*Quaternary Geology* 34(3-4):69-149, pls. 1-12.

MARTIN, P. & G. LAURENS. 1995. About the presence of *Cypraea mappa* in the French Polynesia. *La Conchiglia* 27(274):12-14, figs. 1-10.

MAYHEW, R. & F. COLE. 1994. A preliminary checklist, with taxonomic notes, of the shell-bearing molluscs from the NW Atlantic north of Cape Cod (excluding Greenland) and the Canadian Arctic Archipelago. *Of Sea & Shore* 16(4):233-239.

MAYHEW, R. & F. COLE. 1995. A taxonomic discussion and update of shell-bearing marine molluscs reported from the NW Atlantic north of Cape Cod (including western Greenland) and the Canadian Arctic. *Of Sea & Shore* 18(2):99-114, 116.

McLEAN, J.H. 1996. The Prosobranchia. In: Scott, P.H., Blake, J.A., & Lissner, A. (eds.), *Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel*, v. 9, *The Mollusca 2: The Gastropoda*. Santa Barbara Museum of Natural History. p. 1-160, figs. 1.1-1.29.

McLEAN, J.H. & E.V. COAN. 1996. Marine mollusks of Rocas Alijos. In: Schmieder, R.W. (ed.), *Rocas Alijos, Scientific results from the Cordell Expeditions*. Kluwer Academic Publishers: Dordrecht, The Netherlands. *Monographiae Biologicae* 75:305-318.

MÉHEUT, R. 1995. A special find. *Strandloper* 241:8 [Reprinted from *Rossiniana* 61:8, 1984].

MEIR, D. B.-Y. 1999. Shells from archaeological contexts in Israel. *Qadmoniot* 117:45-51, 8 unnumbered figs. [Hebrew].

\*METZ, G. 1995. WSM goes north to Alaska. *The Festivus* 27(8):93.

MEYER, C. 1995. A possible cause for cypraeid melanism in New Caledonia [abstract]. *Western Society of Malacologists, Annual Report* 27:14-15 [reprinted in *Of Sea & Shore* 18:4 (1996)].

MEYER, C.P. 1995. Character complexes and phylogenetic analyses of *Cypraea* [abstract]. *American Malacological Union, Abstracts and Program*, p. 34.

MEYER, C.P. 1996. Melanistic & rostrate cowries: A possible cause for cypraeid melanism in New Caledonia. *Of Sea & Shore* 18(4):194.

MEYER, C.P. 1997. Molecular phylogeny of living *Cypraea* [abstract]. *Western Society of Malacologists Annual Report* 29:11-12.

\*MEYER C.P. 1998. *Phylogenetic systematics, biogeography and diversification patterns in cowries* [Ph.D. dissertation]. University of California, Berkeley. v + 221 p., 9 figs. [chapter 1]; + 14 figs.

- [chapter 2]; + 37 figs. [chapter 3]; + 9 figs. [chapter 4].
- MEYER, C. & R. GURALNICK. 1997. When are characters not homologies and patterns not evolutionary? Review of *An atlas of cowrie radulae (Mollusca: Gastropoda: Cypraeoidea: Cypraeidae)* by H. Bradner & E.A. Kay. *The Veliger* 40(3):280.
- MEYER, D. & M. MEYER. 1995. Sea shell Museum of Shelly Beach. *Strandloper* 241:11, 2 unnumbered figs. [Also printed in *Of Sea & Shore* 17(4):186-187, 4 unnumbered figs].
- MIENIS, H.K. 1994. Cowries and coins, 2. *Levantina* 80:23.
- MIENIS, H.K. 1998. Shells collected during the North Sinai Archaeological Survey: Some facts and figures. *Levantina* 83:13-15.
- MIKKELSEN, P.M., P.S. MIKKELSEN & D.J. KARLEN. 1995. Molluscan biodiversity in the Indian River Lagoon, Florida. *Bulletin of Marine Science* 57(1):94-127, fig. 1.
- MINK, W. 1996. *Malakophilatelistische seiten* (21). *Club Conchylia* 28(5-6):29-34, numerous unnumbered figs. [German].
- MINK, W. 1998. *Malakophilatelistische seiten* (23). *Club Conchylia* 30(4/6):149-151, 17 unnumbered figs. [German].
- MINTON, D. 1994. Collectors collections. *Hawaiian Shell News* 42(3):11.
- MINTON, D. 1994. A look under the sea. *Hawaiian Shell News* 42(8):8.
- MINTON, D. 1995. Following tracks in the Hawaiian sands. *Hawaiian Shell News* 43(1):3-5, 1 unnumbered fig.
- MOCK, D.K.S. 1996. A new species of *Erronea* from the Philippine [sic]. *World Shells* 18:63-66, figs. 1-10.
- \*MONEGATTI, P., S. RAFFI, & G. RAINERI. 1997. The Monte Falcon-Rio Riorzo section: Biostratigraphic and ecobiostratigraphic remarks. *Bolettino della Società Paleontologica Italiana* 36(1-2):245-260, figs. 1-7.
- MORETZSOHN, F. 1998. The *cribraria* conundrum: Untangling a species complex in the Cypraeidae (Mollusca: Gastropoda) [abstract]. In: Bieler, R. & Mikkelsen, P.M. (eds.), *Abstracts of the World Congress of Malacology*, p. 231.
- MORETZSOHN, F. & E.A. KAY. 1995. Hawaiian marine molluscs—An update to Kay 1979. University of Hawai'i at Manoa: Honolulu, Hawai'i, 23 p.
- MYLES, C. & P. DUNCAN. 1998. A new *Cypraea* record for Australia? *Australasian Shell News* 99/100:6, 2 unnumbered figs.
- NEMEC, J. 1995. A tiger cowry with an inscription. *Of Sea & Shore* 18(3):175, 1 unnumbered fig.
- \*NESBITT, E.A. 1995. Paleocological analysis of molluscan assemblages from the middle Eocene Cowlitz Formation, southwestern Washington. *Journal of Paleontology* 69(6):1060-1073, figs. 1-6.
- \*NESBITT, E.A. 1998. Marine fauna of the middle Eocene Tukwila Formation, King County. *Washington Geology* 26(1):13-19, figs. 1-3, pl. 1.
- NEUBERT, E. 1998. Six new species of marine gastropods from the Red Sea and the Gulf of Aden. *Fauna of Arabia* 17:463-472, figs. 1-25.
- NIESEN, T.M. 1994. *Beachcombers Guide to California Marine Life*. Gulf Publishing Company: Houston, Texas. 192 p., numerous figs.
- OLIVERIO, M. R. CHEMELLO & M. TAVIANI. 1995. Host association and external morphology of *Dentiovula dorsuosa* from the Red Sea (Prosobranchia, Caenogastropoda, Ovulidae). *Argonauta* 9(1-6):23-30, figs. 1-20.
- OMI, Y. 1998. A note on an occurrence of living *Lyncina porteri* (Cate) (Gastropoda: Cypraeidae) from Okinawa Island and Miyakojima Island. *Chiribotan* 28(3):66-67, figs. 1-2 [Japanese with English abstract].
- OMI, Y. 1998. A note on the first occurrence of *Notadusta rabaulensis* Schilder (Gastropoda: Cypraeidae) in Japan. *Chiribotan* 28(4):82-83, figs. 1-2 [Japanese with English abstract].
- OMI, Y. 1999. A note on the occurrence of *Lyncina leviathan* (Gastropoda: Cypraeidae) from the Ogasawara Islands. *Chiribotan* 30(2):36-38, pl. 1 [Japanese with English abstract].
- OPITZ, C.J. 1999. Money cowries. *Of Sea & Shore* 22(2):56.
- ORR, J. 1998. The caring octopus and other essays from a mollusc watcher. *Of Sea & Shore* 20(4):191-203, figs. 1-17.
- ORR, J. 1998. Seeking clues in clay: Essays from a mollusc watcher, continued. *Of Sea & Shore* 21(1):35-46, figs. 1-13.
- ORR, J. 1998. Essays from a mollusc watcher, III. *Of Sea & Shore* 21(2):95-105, 10 unnumbered figs.
- ORR, J. 1998. Essays from a mollusc watcher, IV. *Of Sea & Shore* 21(3):133-140, figs. 1-9.
- ORR, J. 1999. Observations of a mollusc watcher, VI. *Of Sea & Shore* 22(1):39-44, 56, 3 unnumbered figs.
- ORR, J. 1999. Observations of a mollusc watcher, VII. *Of Sea & Shore* 22(2):72-76, figs. a-g.
- \*ORSINA, P. 1994. The subfossil cowries of the Maldives. *World Shells* 10:80-83, figs. 1-15.
- ORSINA, P. 1995. *Linosa: Here and there around the world*. *World Shells* 15:124-126, 2 unnumbered figs.



- ORSINA, P. 1997. Shells down through time, briefly "related" by a keen present-day collector journalist, man of letters and...poet. *World Shells* 21-22:98-102, 2 unnumbered figs.
- OSORIO, C., M.E. RAMÍREZ, C. GALLARDO & F. JARA. 1995. Advances on biology endemic molluscs in Easter Island [abstract]. In: Guerra, A., Rolán, E. & Rocha, F. (eds.), *Unitas Malacologica*, 12th International Malacological Congress, Abstracts, p. 104.
- \*OZAWA, T., K. INOUE & S. TOMIDA. 1995. Early to middle Miocene molluscan fossils from the Megami and Ebie limestones in Shizuoka Prefecture and their implications for the formation of a Miocene coral-algal reef within the Japanese faunal realm. *Transactions and Proceedings of the Palaeontological Society of Japan* 179:175-183, figs. 1-3.
- \*PACAUD, J.-M. & J. Le RENARD. 1995. Révision des mollusques Paléogènes du Bassin de Paris IV. Liste systématique actualisée. *Cossmanniana* 3(4):151-187 [French with English abstract].
- PEARSON, G. 1994. A bungee jumping cowry. *Hawaiian Shell News* 42(3):1, 3, 2 unnumbered figs.
- \*PERILLIAT, M. del C. 1996. Occurrence of the Tethyan gastropods *Campanile* and *Gisortia* in the lower Eocene part of the Tepetate Formation, Baja California, Mexico. *The Veliger* 39(2):178-183, figs. 1-8.
- PETIT, R.E. 1997. A century-old dispute revisited. *American Conchologist* 25(4):4-6, 4 unnumbered figs.
- PETRUCCIOLI, L. 1994. Barbecued shells! *La Conchiglia* 26(272):60, figs. 1-2.
- \*PETUCH, E.J. 1994. Atlas of Florida fossil shells. *Graves Museum of Archaeology and Natural History: Sarasota, Florida*. xii + 394 p., 20 figs. 100 pls.
- \*PETUCH, E.J. 1995. Molluscan diversity in the late Neogene of Florida: Evidence for a two-staged mass extinction. *Science* 270(52234):275-277, fig. 1.
- \*PETUCH, E.J. 1996. *Calusacypraea*, a new, possibly neotenic genus of cowries (Gastropoda: Cypraeidae) from the Pliocene of southern Florida. *The Nautilus* 110(1):17-21, figs. 1-11.
- \*PETUCH, E.J. 1997. Coastal paleoceanography of eastern North America (Miocene-Pleistocene). *Kendall/Hunt Publishing Co.: Dubuque, Iowa*. vii + 373 p., 120 figs.
- \*PETUCH, E.J. 1997. A new gastropod fauna from an Oligocene back-reef lagoonal environment in west central Florida. *The Nautilus* 110(4):122-138, figs. 1-72.
- PETUCH, E.J. 1998. The molluscan fauna of the Wawa River region, Miskito Coast Nicaragua: Ecology, biogeographical implications, and descriptions of new taxa. *The Nautilus* 111(1):22-44, figs. 1-50.
- \*PETUCH, E.J. 1998. New cowries from the Myakka Lagoon System and the Everglades pseudotoll (Pliocene Okeechobean Sea). *La Conchiglia* 30(288):27-37, figs. 1-20.
- PINN, F. 1996. The money cowry of the Maldive Islands, a miracle of reproduction(?). *Of Sea & Shore* 18(4):217-218.
- POLAND, P.L. 1998. *Simnialena uniplicata* (Sowerby, 1848). *American Conchologist* 26(1): back cover, 2 unnumbered figs.
- POPE, K. 1998. The aftermath of a hurricane. *Of Sea & Shore* 21(2):80-82, 2 unnumbered figs.
- POPPE, G. 1995. Double-handed *gloriamaris* and other faked shells. *La Conchiglia* 27(277): 12-16, figs. 1-27.
- POPPE, G.T. & P. MARTIN. 1997. A new species of *Pustularia* from the Philippines (Gastropoda: Cypraeidae). *Gloria Maris* 35(6):81-88, pls. 1-2.
- \*PORTELL, R.W., K.S. SCHINDLER & D. NICOL. 1995. Biostratigraphy and paleoecology of the Pleistocene invertebrates from the Leisey Shell Pits, Hillsborough County, Florida. *Bulletin of the Florida Museum of Natural History* 37(5):127-164, figs. 1-6.
- PRATI MUSETTI, A. 1995. Dr. Luigi Raybaudi Massilia. *World Shells* 15:112-121, figs. 1-17.
- PREECE, R.C. 1995. The composition and relationships of the marine molluscan fauna of the Pitcairn Islands. *Biological Journal of the Linnean Society* 56:339-358.
- PURTYMUN, B. 1994. Snorkeling for gems on Majuro. *Hawaiian Shell News* 42(2):6-7, 3 unnumbered figs.
- PURTYMUN, B. 1994. Shelling in the rain. *Hawaiian Shell News* 42(3):8, 2 unnumbered figs.
- RAYBAUDI MASSILIA, G. 1995. "Roma locuta... sententia confutata." *Hawaiian Shell News* 43(7):3, 7.
- RAYBAUDI MASSILIA, L. 1994. *Crossia iutsui atlantica* Raybaudi, 1988. *World Shells* 8: inside cover, figs. 2-3 + cover.
- RAYBAUDI MASSILIA, L. 1994. *Zoila (Zoila) marginata* (Gaskoin, 1848). III. Revision of the species and its subspecies. *World Shells* 8:16-24, figs. 72-96, pls. 1-3.
- RAYBAUDI MASSILIA, L. 1994. Review of *A Guide to Worldwide Cowries* by Felix Lorenz, Jr. & Alex Hubert. *World Shells* 8:47.
- RAYBAUDI MASSILIA, L. 1994. Review of *Australian Marine Shells (1-Prosobranch-Gastropods)* by B. Wilson. *World Shells* 8:67, 1 unnumbered fig.



- RAYBAUDI MASSILIA, L. 1994. *Luponia castanea* Higgins, 1868. World Shells 8:96, 5 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1994. *Zoila* (*Zoila*) *marginata* (Gaskoin, 1848). IV. Revision of the species and its subspecies. World Shells 9:19-24, figs. 97-114.
- RAYBAUDI MASSILIA, L. 1994. *Barycypraea fultoni* (Sowerby, 1903) and its varieties. World Shells 9:34-41, figs. 1-8, pls. 1-2.
- RAYBAUDI MASSILIA, L. 1994. *Luponia algoensis* (Gray, 1825) and its different forms. World Shells 9:63-66, figs. 1-12.
- RAYBAUDI MASSILIA, L. 1994. *Erronea* (*Adusta*) *pyriformis* (Gray, 1824), quid est *angioyorum*? World Shells 9:70-72, figs. 1-6.
- RAYBAUDI MASSILIA, L. 1994. Kwajalein and its cowries. World Shells 9:97-105, 15 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1994. Review of *The Classic Shells of the World* by T.C. Lan. World Shells 9:115, 1 unnumbered fig.
- RAYBAUDI MASSILIA, L. 1994. *Nucleolaria granulata cassiaui* (Burgess, 1965), Marquesas Islands. World Shells 9: inside front cover + 116-117, 5 unnumbered figs. + cover.
- RAYBAUDI MASSILIA, L. 1994. *Zoila* (*Zoila*) *marginata* (Gaskoin, 1848). V. Revision of the species and its subspecies. World Shells 10:36-42, figs. 115-128.
- RAYBAUDI MASSILIA, L. 1994. Kwajalein and its cowries. II. World Shells 10:92-96, 11 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1994. Again on *Zoila marginata*. World Shells 10:99-101, figs. 1-7.
- RAYBAUDI MASSILIA, L. 1994. *Cypraeovula-Luponia fuscorubra* f. *sinistrorsa*. World Shells 11: cover + inside front cover, 2 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1994. *Cypraeovula-Luponia amphithales* (Melvill, 1888) and his problems. World Shells 11:9-13, figs. 1-14 (+ 3 unnumbered figs. on p. 49).
- RAYBAUDI MASSILIA, L. 1994. New from New Caledonie. World Shells 11:26, 4 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1994. New from New Caledonie. World Shells 11:51, 2 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1994. Kwajalein and its cowries. III. World Shells 11:78-82, 13 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1994. New from New Caledonie. World Shells 11:56, 1 unnumbered fig.
- RAYBAUDI MASSILIA, L. 1994. *Zoila* (*Zoila*) *rosselli*. World Shells 11:105 + back cover, 5 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1995. Cover quiz. World Shells 12: front cover & inside front cover, 2 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1995. *Crossia iutsui* Shikama, 1974, Revision of Raybaudi index card no. 44 (1988). World Shells 12:17, 24-29, figs. 1-16, inside back cover.
- RAYBAUDI MASSILIA, L. 1995. Kwajalein and its cowries. IV. World Shells 12:76-81, 14 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1995. *Zoila venusta*. World Shells 12: inside front cover, 1 unnumbered fig. + front cover.
- RAYBAUDI MASSILIA, L. 1995. Sua altezza reale il Principe di Napoli Vittorio Emanuele di Savoia. World Shells 13:4-9, 6 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1995. *Zoila* (*Zoila*) *lobettiana* nova species. World Shells 13:15-17, 15 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1995. *Zoila* (*Zoila*) *venusta* (Sowerby, 1846). World Shells 13:25-35, 13 unnumbered figs., pls. 1-4.
- RAYBAUDI MASSILIA, L. 1995. Kwajalein and its cowries. V. World Shells 13:77-81, 13 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1995. Cover quiz. World Shells 13: inside back cover, 3 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1995. *Zoila* (*Zoila*) *venusta* (Sowerby, 1846) (III). World Shells 14: 32-43, figs. 1-10, 3 unnumbered figs., pls. 5-8.
- RAYBAUDI MASSILIA, L. 1995. *teramachii splendida* f. *nigerrima*. World Shells 14:52, 2 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1995. Two new great rarities among South African endemics. World Shells 14:68-72, figs. 1-20.
- RAYBAUDI MASSILIA, L. 1995. *Zoila* (*Zoila*) *venusta*: Personal digressions. World Shells 14: 77-80, 4 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1995. An answer to Dr. Alex Hubert. World Shells 14:90-95, figs. 1-22.
- RAYBAUDI MASSILIA, L. 1995. *Lyncina leucodon*. World Shells 14: inside back cover, 1 unnumbered fig.
- RAYBAUDI MASSILIA, L. 1995. *Crossia iutsui atlantica*. World Shells 15: front & inside covers, p. 5, 2 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1995. *Zoila* (*Zoila*) *venusta* (Sowerby, 1846) (III). World Shells 15:13-25, figs. 1-13, pls. 8-11.
- RAYBAUDI MASSILIA, L. 1995. *Venusta episema* f. *sorrentensis* on eggs. World Shells 15:25, 1 unnumbered fig.
- RAYBAUDI MASSILIA, L. 1995. An ugly story. World Shells 15:54, 92, 1 unnumbered fig.
- RAYBAUDI MASSILIA, L. 1995. What is there in the South African ocean? World Shells 15:57, 103, 4

unnumbered figs.

RAYBAUDI MASSILIA, L. 1995. *Cribrarula cribrarula*. World Shells 15:79, 2 unnumbered figs.

RAYBAUDI MASSILIA, L. 1995. Kwajalein and its cowries (VI). World Shells 15:136-140, 14 unnumbered figs.

RAYBAUDI MASSILIA, L. 1995. News from N. Caledonia. World Shells 15:142, 1 unnumbered fig.

RAYBAUDI MASSILIA, L. 1996. *Zoila (Zoila) thersites contraria* Iredale, 1935 a very controversial taxon. World Shells 16:21-28, figs. 1-23.

RAYBAUDI MASSILIA, L. 1996. *Comoedia, immo fabula, sydneyensis*. World Shells 16:74-75.

RAYBAUDI MASSILIA, L. 1996. *Mea culpa, mea culpa, mea maxima culpa*. World Shells 16:82-88, figs. A-B + 6 unnumbered figs.

RAYBAUDI MASSILIA, L. 1996. *Zoila (Zoila) thersites contraria* Iredale, 1935 (II): A very controversial taxon. World Shells 17:3-15, figs. 24-72.

RAYBAUDI MASSILIA, L. 1996. *Notadusta katsiae--musumea--vicdani*. World Shells 17:40-51, figs. 1-26.

RAYBAUDI MASSILIA, L. 1996. *Notadusta martini*. World Shells 18: inside front cover, 1 unnumbered fig. + front cover.

RAYBAUDI MASSILIA, L. 1996. *Erosaria (Paulonaria) thomasi* Crosse, 1865: An enigma solved. World Shells 18:13-25, figs. 1-30.

RAYBAUDI MASSILIA, L. 1996. Kwajalein and its cowries. VII. World Shells 18:70-81, 29 unnumbered figs.

RAYBAUDI MASSILIA, L. 1997. Kwajalein and its cowries (VIII). World Shells 20:45-59, 38 unnumbered figs.

RAYBAUDI MASSILIA, L. 1997. And here our opinion. World Shells 20:68, 2 unnumbered figs.

RAYBAUDI MASSILIA, L. 1997. Off the cuff. World Shells 20:75-77, 3 unnumbered figs. (includes "the diabolic shell" on p. 44).

RAYBAUDI MASSILIA, L. 1997. *Blasicrura teres* (Gmelin, 1791). World Shells 21:22: front cover and inside front cover, 1 unnumbered fig.

RAYBAUDI MASSILIA, L. 1997. *Erosaria menkeana* (Desahyes, 1863): An extremely rare and unknown species. World Shells 21:22:80-84, figs. 1-2.

RAYBAUDI MASSILIA, L. 1997. Kwajalein and its cowries. IX. World Shells 21:22:90-97, 22 unnumbered figs.

RAYBAUDI MASSILIA, L. 1997. *Cribrarula gaskoini* (Reeve, 1846). World Shells 23: front cover and inside front cover, 1 unnumbered fig.

RAYBAUDI MASSILIA, L. 1997. *Zoila venusta orientalis*. World Shells 23:39.

RAYBAUDI MASSILIA, L. & F. LOBETTI BODONI. 1994. Cypraeidae revision. World Shells 8:71-73, 6

unnumbered figs.

RAYBAUDI MASSILIA, L. & F. LOBETTI BODONI. 1994. Cypraeidae revision. World Shells 9:54-58, 8 unnumbered figs.

RAYBAUDI MASSILIA, L. & F. LOBETTI BODONI. 1994. Cypraeidae revision. World Shells 10:64-68, 8 unnumbered figs.

RAYBAUDI MASSILIA, L. & F. LOBETTI BODONI. 1994. Cypraeidae revision. World Shells 11:62-66, 8 unnumbered figs.

RAYBAUDI MASSILIA, L. & F. LOBETTI BODONI. 1995. Cypraeidae revision. World Shells 12:62-66, 9 unnumbered figs.

RAYBAUDI MASSILIA, L. & F. LOBETTI BODONI. 1995. Cypraeidae revision. World Shells 13:97-100, 8 unnumbered figs.

\*RAYMOND, T.C. 1997. Two new gastropods from the Pliocene Pinecrest beds of Florida. Tulane Studies in Geology and Paleontology 29(3-4):141-144, pl. 1.  
RHO, B.J., B.L. CHOE, J. LEE & H.J. KIL. 1998. Malacofauna of Geojedo Island, Korea. Korean Journal of Systematic Zoology 14(3):257-278, figs. 1-2 [Korean with English abstract].

RICE, T. 1994. Shells on stamps. Of Sea & Shore 16(4):240-241, numerous unnumbered figs.

RICE, T. 1994. To Thailand & the Philippines. Of Sea & Shore 17(2):109-117, 18 unnumbered figs.

RICE, T. 1995. To Anilao, Balicasag and points in between. Of Sea & Shore 17(4):232-234, 5 unnumbered figs.

RICE, T. 1995. Mollusks on postage stamps update. Of Sea & Shore 18(1):15-17, numerous unnumbered figs.

RICE, T. 1995. To Anilao, Balicasag and points in between, continued from the last issue. Of Sea & Shore 18(1):23-26, 5 unnumbered figs.

RICE, T. 1996. Shells on stamps. Of Sea & Shore 18(4):233-234, 1 unnumbered fig.

RICE, T. 1996. A checklist of mollusks on postage stamps. Of Sea & Shore Publications: Port Gamble, Washington. 89 p.

RICE, T. 1996. Cinderella stamps. La Conchiglia 28(279):57-58, 7 unnumbered figs.

RICE, T. 1998. Destination paradise. Of Sea & Shore 21(1):17-19, 54. 5 unnumbered figs.

RICE, T. 1998. Drew & Tom's excellent adventures. Of Sea & Shore 21(2):107-111, 6 unnumbered figs.

RICE, T. 1998. Drew & Tom's excellent adventures, continued. Of Sea & Shore 21(3):161-169, 15 unnumbered figs.

RICE, T. 1999. Travels with Tom. Of Sea & Shore



22(1):45-55, 36, 17 unnumbered figs.

RICE, T. 1999. Memories are made of this: Shelling throughout the years. *Of Sea & Shore* 22(2):101-113, 20 unnumbered figs.

RINALDI, A.C. 1997. About *Erosaria marginalis* Dillwyn, 1827 (Cypraeidae, Prosobranchia). *La Conchiglia* 29(282):55-59, figs. 1-6.

RIOS, E. de C. 1994. Seashells of Brazil, 2nd edition. Editoria da Furg: Rio Grande, Brazil. 368 p., 113 pls.

ROBERTS, T. 1996. Shelling in Western Australia: Margaret River to Montebello. *Of Sea & Shore* 19(1):15-18, 2 unnumbered figs.

ROBERTS, T. 1997. Vietnam - A different world. *Of Sea & Shore* 20(3):137-144, 7 unnumbered figs.

ROCHA, C. de A., H. MATTHEWS-CASCON & H.R. MATTHEWS. 1994. Estudo morfológico comparativo de *Cyphoma signatum* Pilsbry e McGinty, 1939 e *Cyphoma macumba* Petuch, 1979 (Mollusca: Gastropoda: Ovulidae). *Revista Nordestina de Biologia* 9(2):149-161, figs. 1-8 [Portuguese with English abstract and summary].

ROSENBERG, G. 1997. Why do shells have their colors? *American Conchologists* 25(1):25-26, 1 unnumbered fig.

ROSENBERG, G. 1997. Conchatenations: What's a good name? *American Conchologist* 25(3):28-29.

RUJDER, B. 1994. Two more *Cypraea lentiginosa* reported from Habonim, Israel. *Levantina* 80:16.

SAVAZZI, E. 1998. The colour patterns of cypraeid gastropods. *Lethaia* 31:15-27, figs. 1-7.

SCHELTEMA, R.S., I.P. WILLIAMS & P.S. LOBEL. 1996. Retention around and long-distance dispersal between oceanic islands by planktonic larvae of benthic gastropod Mollusca. *American Malacological Bulletin* 12(1/2):67-75, figs. 1-6.

\*SCHNEIDER, N. 1997. A late Pleistocene *Cypraea* (*Macrocypaea*) *cervinetta*. *The Festivus* 29(6):53, figs. 1-2.

\*SCHNEIDER, N. 1999 Not all shells in Baja California are Recent (A new listing of molluscan species from the Mulegé Formation and environs). *The Festivus* 31(1):3-16, figs. 1-12.

SCHWABE, E. 1998. Die mollusken fauna von Western Samoa. *Club Conchylia* 30(4/6):93-106, 36 unnumbered figs. [German].

SENDERS, J. & R. SENDERS. 1995. Some particular uses of seashells. *La Conchiglia* 27(276): 16-19, figs. 1-8.

SHIGEO, H., E. TSUCHIDA, A. GŌ & K. NAKAGUCHI. 1999. A record of *Crenavolva* (*Cuspidolva*) *mucronata* Azuma & Cate from 240-302 m deep off Amami-Oshima Island. *Chiribotan* 30(2):27-31,

figs. 1-4 [Japanese with English abstract].

\*SHOU-REN, Y. 1997. Holocene marine molluscs on the south coast of Hainan Island and their climatic features. *Acta Paleontologica Sinica* 36(4):453-472, fig. 1, pls. 1-3 [Chinese with English summary].

SIMONE, L.R.L. de, 1998. Morphological study of caenogastropod superfamilies as base for a phylogenetic revaluation [abstract]. In: Bieler, R. & Mikkelsen, P.M. (eds.), Abstracts of the World Congress of Malacology, p. 305.

\*SIMONE, L.R.L. de & S. MEZZALIRA. 1994. Fossil molluscs of Brazil. *Instituto Geológico São Paulo Boletim* 11:1-202, pls. 1-51.

SIMONET, O. 1994. *Cypraea thomasi* Crosse, 1865: A Marquesan cowrie. *Hawaiian Shell News* 42(4):1, 6-7, 1 unnumbered fig, pl. 1.

SMALL, M. 1994. Clipperton '94: An initial report. *The Festivus* 26(7):78-83, figs. 1-3.

SMALL, M. 1994. Marine gastropod habitats of western Panama. *The Festivus* 26(10):107-122, figs. 1-13.

SMALL, M. 1995. Clipperton: Where the Panamic and Indo-Pacific meet. *World Shells* 13:108-112, figs. 1-5.

SMITH, L. 1998. An exhibit at a hobbies fair. *Strandloper* 250:7, 1 unnumbered fig.

SMITH, L. 1998. 'Kilburnalia.' *The Strandloper* 254:1, 6, figs. K1-K7, 1 unnumbered fig.

SMRIGLIO, C. & P. MARIOTTINI. 1999. An exceptional specimen of *Cypraea grayana*, Schilder, 1930. *La Conchiglia* 30(290):4748, figs. 1-7.

SNYDERMAN, M. 1998. California Marine Life. Roberts Rinehart Publishers: Niwot, Colorado. xi+180 p.

SPRINGER, M. 1994. Collecting in the Philippines.

*Of Sea & Shore* 17(1):49-52, figs. 1-11.

SPRINGER, S. & M. SPRINGER, 1996. Shelling in Costa Rica. *Of Sea & Shore* 19(1):21-22.

\*SQUIRES, R.L. & R.A. DEMETRION. 1994. New reports of Eocene mollusks from the Bateque Formation, Baja California Sur, Mexico. *The Veliger* 37(2):125-135, figs. 1-22.

\*SQUIRES, R.L. & J.L. GOEDERT. 1994. Macropaleontology of the Eocene Crescent Formation in the Little River area, southern Olympic Peninsula, Washington. *Natural History Museum of Los Angeles County Contributions in Science* 444:1-32, figs. 1-62.

\*SQUIRES, R.L., J.L. GOEDERT, S.R. BENHAM & L.T. GROVES. 1996. Protoconch of the rare ovulid gastropod *Cypraeogemmula warnerae* Effinger, 1938, from the Eocene of Washington. *The Veliger* 39(2):151-156, figs. 1-8.

STAPLIN, F.L. Another look at snakeheads. *Hawaiian*

Shell News 42(12):3-4.

STEENE, R. 1994. Coral reefs: Nature's richest realm. Crescent Books: New York. 336 p., 336 pls.

SUNDERLAND, K. & L. SUNDERLAND. 1994. Selected Florida and Caribbean shells in the Florida Museum of Natural History, Gainesville. American Conchologist 22(1):14-15, 24 unnumbered figs.

TAUBES, G. 1998. Wall Street smarts. Discover 19(10):104-112. Numerous unnumbered figs.

THACH, N.N. 1998. Preliminary observations on the Vietnamese shells. Of Sea & Shore 21(1):20-26, figs. 1-83.

THORSSON, W. 1999. Dr. C.M. Burgess 1908-1999. Of Sea & Shore 22(1):15.

\*TOMIDA S. 1996. Late Neogene tropical and subtropical molluscan faunas from the south Fossa-Magna region, central Japan. Bulletin of the Mizunami Fossil Museum 23:89-140, figs. 1-7, pls. 24-34.

\*TRACEY, S., J.A. TODD, J. Le RENARD, C. KING & M. GOODCHILD. 1996. Distribution of Mollusca in units S1 to S9 of the Selsey Formation (middle Lutetian), Selsey Peninsula, West Sussex. Tertiary Research 16(1-4):97-139, fig. 1, pls. 1-3.

TREGO, K.D. 1994. *Cypraea* from Diego Garcia. The Cowry n.s. 1(2):42.

TREGO, K. 1996. Mid-shell hole repair in marine Gastropoda: An example in *Cypraea friendii* Gray, 1831 (Gastropoda: Cypraeidae). Arion 21(3):75, figs. 1-2.

TSUCHIDA, E., T. KUROSUMI & A. GÖ. 1999. A new record of *Trivia (Trivirostra) hallucinata* Lilltved from off Kerama Rettō, southern Japan. Chiribotan 29(3):51-56, figs. 1-4 [Japanese with English abstract].

TURGEON, D.D. (Chair) + 14 others. 1998. Common and scientific names of aquatic invertebrates from the United States and Canada: Mollusks, second edition. American Fisheries Society Special Publication 26: Bethesda, Maryland, ix + 509 p., 45 unnumbered figs.

van den BERG, J. 1996. A tour of discovery along the Cape coast. Strandloper 245:7-11, 22 unnumbered figs.

van den BERG, J. 1997. Happy finds of a nutty shell collector. Strandloper 251:8-9, 8 unnumbered figs.

van den BERG, L. 1994. The magic of the cowrie—either fertility or currency. Strandloper 237:11, 1 unnumbered fig.

VELDSMAN, V. 1998. Interessante fonds van suid Natal. The Strandloper 254:10-11, figs. 1-5 [Afrikaan].

VOKES, E.H. 1998. The mystery of *Murex margaritensis* Abbott, 1958. American Conchologist 26(3):4-6, 5 unnumbered figs.

WATERS, D.R., E.J. PETUCH & N. SERRAND.

1999. Anomalous distributions of *Vasum globulus*: Discordant records of an endemic gastropod in archaeological and modern contexts. Caribbean Journal of Science 35(1-2):83-92, figs. 1-5.

WATTS, D. 1997. Recent finds. Electronic Hawaiian Shell News, March 1997:4-5, 3 unnumbered figs.

WEBB, R. 1995. After reading Sue's article, someone said "So what shells did you collect?" Hawaiian Shell News 43(9):12, 2 unnumbered figs.

WELLS, F.E. 1994. Ecology and geomorphology of the Cocos (Keeling) Islands. Marine molluscs of the Cocos (Keeling) Islands. Atoll Research Bulletin 410:1-22.

\*WILSON, B.R. 1998. Superfamily Cypraeoidea and superfamily Velutinoidea. In: Beesley, P.L., Ross, G.J.B. & Wells, A. (eds.), Mollusca: The Southern Synthesis. Fauna of Australia 5, part B. CSIRO Publishing: Melbourne, Australia. p. 780-786, figs. 15.130-15.131 [Cypraeoidea], p. 786-790, figs. 15.132-15.133 [Velutinoidea].

YAMAGUCHI, M. 1995. Aquaculture and stock enhancement of reef molluscs. Phuket Marine Biological Center Special Publication 15:45-50.

YAMAGUCHI, M. 1998. Edible molluscs from tropical seagrass-beds in the Indo-Pacific—past and present. Asian Marine Biology 15:211-224, figs. 1-5.

YOSHIMOTO, D. 1999. The New Banks shell collection aboard the *Endeavor*. American Conchologist 27(4):8-9, 2 unnumbered figs.

ZIDEK, J. & J.H. BLACK. 1994. Lt.-Col. R.J. Griffiths and his cowry journal. The Cowry n.s. 1(1):1-4, 2 unnumbered figs.

#### PRE-1994 CYPRAEOIDEAN AND TRIVIOIDEAN REFERENCES

The following pre-1994 cypraeoidean and trivioidean literature was overlooked or unknown to the author at the time of publication of Groves (1994).

ABBOTT, R.T. 1991. Seashells of Southeast Asia. Graham Brash (Pte) Ltd.: London. 145 p., 52 pls.

ABBOTT, R.T. 1993. Seashells of the Northern Hemisphere. Longmeadow Press: Stamford, Connecticut. 191 p., numerous unnumbered figs.

\*AGUILAR, T. & R. FISCHER. 1986. Moluscos de la Formación Montezuma (Plioceno-Pleistoceno; Costa Rica). Geologica et Palaeontologica 20:209-241, figs. 1-6, pls. 1-6 [German with English summary].



- ALAMO V., V. & V. VALDIVIESO, M. 1987. Lista sistematica de moluscos marinos del Peru. Instituto del Mar del Peru Boletín, volumen extraordinario, p. 1-205, figs. 1-406 [Spanish].
- \*AMANO, K. 1992. *Cypraea ohiro* and its associated molluscan species from the Miocene Kadonosawa Formation, northeast Japan. Bulletin of the Mizunami Fossil Museum 19:405-411, figs. 1-2, pl. 57.
- \*ANDERSON, H.-J. 1975. Die fauna der Paläocänen Hückelhovener Schichten aus dem Schacht Sophia Jacoba 6 (Erkelenzer Horst, Niederrheinische Bucht). Teil 3: Scaphopoda, Gastropoda, Cephalopoda. Geologica et Palaeontologica 9:141-171, pls. 11-16 [German].
- \*ANGIER, N. 1982. Time machines in the sea. Discover 3(8):51-53, 3 unnumbered figs.
- ANONYMOUS. 1969-1970. Comments please. Keppel Bay Tidings 8(5):4, 1 unnumbered fig.
- ANONYMOUS. 1970. March trip to Humpy Island. Keppel Bay Tidings 8(6):8.
- ANONYMOUS. 1970. Correspondence corner. Keppel Bay Tidings 9(2):8.
- ANONYMOUS. 1970. Extract from a letter from Prof. Dr. F.A. Schilder. Keppel Bay Tidings 9(3):5.
- ANONYMOUS. 1970-1971. Another *Cypraea guttata*. Keppel Bay Tidings 9(5):6.
- ANONYMOUS. 1971. British shells from the south west coast. The Atlantic coast of Cornwall. Newquay and Fistral (50°24'N, 5°54'W). Keppel Bay Tidings 10(2):7, 1 unnumbered fig.
- ANONYMOUS. 1978. Sea feature. Sea Frontiers 24(2): inside back cover, 1 unnumbered fig.
- ANONYMOUS. 1984. Le conchiglie l'uomo un complesso rapporto millenario. Hobby Fauna International News 1(1):3-4, 2 unnumbered figs. [Italian].
- ANONYMOUS. 1984-1985. Cypraeidae. Isole Filippine. Hobby Fauna International News (1):8-9, 6 unnumbered figs.; 1(2):12-13, 10 unnumbered figs. [Italian].
- ANONYMOUS. 1988. Recent find. Hawaiian Shell News 36(6):6, 1 unnumbered fig.
- ANONYMOUS. 1988. World size records. Hawaiian Shell News 36(6):6.
- ANONYMOUS. 1988. *Cypraea* exhibit. Hawaiian Shell News 36(8):8, 1 unnumbered fig.
- ANONYMOUS. 1988. Reefcombings: New limits on *Cypraea thersites*. Hawaiian Shell News 36(11):2.
- ANONYMOUS. 1989. Display of endemic Hawaiian marine shells presented to governor of Hawaii. Hawaiian Shell News 37(1):1, 1 unnumbered fig.
- ANONYMOUS. 1989. World size records. Hawaiian Shell News 37(3):12.
- ANONYMOUS. 1989. Shells are where you find 'um! Hawaiian Shell News 37(8):10.
- ANONYMOUS. 1989. Recent find. Hawaiian Shell News 37(10):12.
- ANONYMOUS. 1989. New shell stamps from Thailand. Hawaiian Shell News 37(11):8, 1 unnumbered fig.
- ANONYMOUS. 1990. Anyone for gold plated cowries? Hawaiian Shell News 38(7):6, 1 unnumbered fig.
- ANONYMOUS. 1991. News of new species. *Lunovula finleyi*. Hawaiian Shell News 39(7):6, 1 unnumbered fig.
- ANONYMOUS. 1992. Publication announcement: The Cowry n.s. Hawaiian Shell News 40(10):6.
- ANONYMOUS. 1993. Other points of view. Hawaiian Shell News 41(2):4.
- ANONYMOUS. 1993. A world-record *Cypraea*. Hawaiian Shell News 41(5):12.
- ANONYMOUS. 1993. A repeat honor for E.R. Cross. Hawaiian Shell News 41(6):6.
- ANONYMOUS. 1993. *Cypraea* animals sought. Hawaiian Shell News 41(11):12.
- \*ASHBY, J.R. & J.A. MINCH. 1986. Stratigraphy and paleoecology of the Mulege Embayment, Baja California Sur, Mexico. Ciencias Marinas 13(2):89-112, figs. 1-4.
- AZUMA, M. 1984. Systematic studies on the Recent Japanese family Ovulidae (Gastropoda). VI. Genera *Alcyvolva* Cate, 1973, *Cymbovula* Cate, 1973, *Dissona* Cate, 1973, *Hiatavolva* Cate, 1973, *Kuroshiovolva* Azuma & Cate, 1971, and *Phenacovolva* Iredale, 1939 (*Pellasinia* Iredale, 1931). Hyogo Biology 8(5):275-286, figs. 1-18, pl. 1 [Japanese].
- AZUMA, M. 1985. Systematic studies on the Recent Japanese family Ovulidae (Gastropoda). VII. Genus *Phenacovolva* Iredale, 1939 (*Turbovolva*, Cate, 1973). Hyogo Biology 9(1):17-21, figs. 19-21a, pl. 1 [Japanese].
- AZUMA, M. 1986. Systematic studies on the Recent Japanese family Ovulidae (Gastropoda). VIII. Genus *Phenacovolva* Iredale, 1939 (*Turbovolva*, Cate, 1973). Hyogo Biology 9(2):98-100, figs. 22-23 [Japanese].
- AZUMA, M. 1987. Systematic studies on the Recent Japanese family Ovulidae (Gastropoda). X. Genus *Phenacovolva* Iredale, 1939, (*Calcarovula*, Cate, 1973). Hyogo Biology 9(3):165-167, figs. 24-25 [Japanese].
- AZUMA, M. 1988. Systematic studies on the Recent Japanese family Ovulidae (Gastropoda). XI. Subgenus

- Calcarovula* Cate, 1973 and genus *Volva* Roding, 1798. Hyogo Biology 9(4):228-230, figs. 26-30 [Japanese].
- AZUMA, M. 1989. Systematic studies on the Recent Japanese family Ovulidae (Gastropoda). XIII. Supplement 2. Hyogo Biology 9(5):286-288, figs. 1-8 [Japanese].
- AZUMA, M. 1994. Systematic studies on the Recent Japanese family Ovulidae. XV. Supplement 4. Chiribotan 25(2):43-48, pls. 1-2 [Japanese].
- \*BABA, K. 1992. Molluscan fossil assemblages from the Nakatsu Group, Kanagawa Prefecture, central Japan. Bulletin of the Mizunami Fossil Museum 19:529-541, fig. 1, pl. 69.
- BANDEL, K. 1991. Ontogenetic changes reflected in the morphology of the molluscan shell. In: Schmidt-Kittler, N. & Vogel, K. (eds.), Constructional Morphology and Evolution. Springer-Verlag: Berlin. p. 211-230, figs. 1-6.
- \*BANDEL, K. 1993. Caenogastropoda during Mesozoic times. Scripta Geologica, Special Issue 2:7-56, pls. 1-15.
- BANISTER, K. & A. CAMPBELL., 1985. The Encyclopedia of Aquatic Life. Facts on File: New York, New York. xii + 349 p. + xvi-xxxiii, numerous unnumbered figs.
- BARASH, A. & Z. DANIN. 1987. Notes on the antilesepsian migration of Mediterranean species of Mollusca into the Indo-Pacific region. Gloria Maris 25(5-6):81-100.
- BARLETTA, G. & A. CASTELLI. 1978. Nota sul ritrovamento di quattro esemplari vivi di *Cypraea macandrewi* Sowerby, 1870 in Mar Rosso (Gastropoda: Cypraeidae). Conchiglie 14(11-12):195-204, pl. 1 [black & white], pl. 1 [color] [Italian].
- BARNETT, J.L. 1989. Some thoughts on shell collecting and present and future shell availability in the Philippines. Hawaiian Shell News 37(1):7-8.
- BARNETT, J.L. 1990. Philippine shells in art. Hawaiian Shell News 38(5):1, 4, 9 unnumbered figs.; 38(5):5, 2 unnumbered figs.
- BARNEY, W. 1989. Reef walking in Fiji. Hawaiian Shell News 37(10):11.
- BARRAND, C. 1990-1991. Cowries and Holidays. Hawaiian Shell News 38(12):5 [1990]; Part II. 39(2):5, 7, 3 unnumbered figs. [1991]; Part III. 39(2):3-4 [1991].
- BELTMAN, M. 1991. Cape of Good Hope, also called Cape of Sorrows. Hawaiian Shell News 39(6):9.
- \*BEU, A.G. 1990. Molluscan generic diversity of New Zealand Neogene stages: extinction and biostratigraphic events. Palaeogeography, Palaeoclimatology, Palaeoecology 77:279-288, figs. 1-2.
- BIELER, R. & A. BRADFORD, 1991. Annotated catalog of type specimens in the malacological collection of the Delaware Museum of Natural History. Nemouria 36:1-48.
- BIGGS, H.E.J. 1973. The marine Mollusca of the Trucial Coast, Persian Gulf. Bulletin of the British Museum (Natural History) 24(8):343-421, figs 1-10, pls. 1-6.
- BIRAGHI, G. 1992. *Erosaria guttata surinensis* Raybaudi and *Umbilia armeniaca* Verco. La Conchiglia 23(264):32, figs. 1-5.
- BIRAGHI, G. 1992. Anthologia Iconica IX. A *Lyncina leucodon* from the Andaman Sea. La Conchiglia 23(264):32-33, 1 unnumbered fig.
- BISHOP, M.J. & S.J. BISHOP. 1973. A census of marine prosobranch gastropods at San Diego, California. The Veliger 16(2):143-152.
- BLANNING, A. 1970. Personal notes. Keppel Bay Tidings 8(6):8.
- BLOCHER, M. 1984. The disturbing question of new species. Hawaiian Shell News 32(11):3.
- BOORMAN, B. 1970. Transporting live shells. Keppel Bay Tidings 9(2):3.
- BRADNER, H. 1983. SEM studies of *Cypraea radulae* II. Western Society of Malacologists Annual Report 15:16.
- BRADNER, H. 1984. Try this on your stereopticon. Hawaiian Shell News 32(11):10, 1 unnumbered fig.
- BRADNER, H. 1988. More on Easter Island *Cypraea cernica*. Hawaiian Shell News 36(3):7.
- BRADNER, H. 1989. *Cypraea luchuana* as a valid species. Hawaiian Shell News 37(6):5, 2 unnumbered figs.
- BRATCHER, T. 1987. Remote, barren Rowley Shoals has its charm. Hawaiian Shell News 35(1):1, 9-10, 3 unnumbered figs.
- BROST, F.B. & R.D. COALE. 1971. A guide to shell collecting in the Kwajalein Atoll. Charles E. Tuttle Company: Rutland, Vermont. xii + 157 p., frontis. + 33 figs.
- \*BRUNT, M.A., M.E.C. GIGLIOLI, J.D. MATHER, D.J.W. PIPER & H.G. RICHARDS. 1973. The Pleistocene rocks of the Cayman Islands. Geological Magazine 110(3):209-221, figs. 1-4.
- BUITRAGO, J. & J. CAPELO. 1993. Los moluscos bentonicos de la region suuoriental de la Bahia de Pozuelos, Puerto de la Cruz, Venezuela. Memoria Sociedad de Ciencias Naturales La Salle 53(223):27-37, fig. 1 [Spanish with English Abstract].
- BURCH, B.L. 1992. William Swainson (1798-1855): England's first lithographer of mollusks. Hawaiian Shell News 40(10):1, 4, 6 unnumbered figs.
- BURCH, J.Q., Mrs. 1993. Collecting on a Sonoran Beach. Hawaiian Shell News 41(3):9, 1 unnumbered fig.



[reprinted from Minutes of the Conchological Club of Southern California, 1948].

BURGESS, C.M. 1989. *Cypraea cruenta* var. *tortirostris* var. nov. Hawaiian Shell News 37(12): 11, 1 unnumbered fig.

BURGESS, C.M. 1991-1992. The Mariel King expedition through the Moluccas II. Davao. Hawaiian Shell News 39(9):2-3, 1 unnumbered fig. [1991]; Arrival of the *Pele*. 39(10):2-3, 1 unnumbered fig. [1991]; Manado. 39(11):3, 1 unnumbered fig. [1991]; Ambon. 39(12):10, 1 unnumbered fig. [1991]; The Banda Sea. 40(1):4-5 [1992]; Islands visited. 40(3):5 [1992]; The final chapter 40(4):1, 4 [1992].

BURGESS, W.E. 1986. Book critique of *Cowries of the World* by C.M. Burgess. Tropical Fish Hobbyist 34(8):53, 56-57, 60-61, 5 unnumbered figs.

BUTLER, A. 1990. Eye of the wind. Hawaiian Shell News 38(7):5-6.

BUTLER, A. 1991. Diving in the Philippines and Sulu Sea. Hawaiian Shell News 39(4):9-10, 3 unnumbered figs.

BUYSE, J.A. 1992. Indian Ocean cowries used [*sic*] in farmer's round game in Holland. Hawaiian Shell News 40(11):3, figs. 1-6.

CAILLIEZ, J.-C. 1987. Even a bivalve can turn anticlockwise. Hawaiian Shell News 35(5):1, 4, figs. 1-8.

\*CAMPBELL, L.D. 1993. Pliocene molluscs from the Yorktown and Chowan River Formations in Virginia. Virginia Division of Mineral Resources Publication 127: vii + 257, figs. 1-3, pls. 1-43.

\*CAMPBELL, L.D. & S.C. CAMPBELL. 1976. Revision of Tuomey and Holmes' Pleiocene fossils of South Carolina. Geologic Notes, South Carolina Division of Geology 20(3):101-114.

\*CAPASSO, L.L. 1976. Prima segnalazione del genere *Cypraea* nel Cretaceo del Matese (Appennino meridionale). Conchiglie 12(9-10):211-215, figs. A-B [Italian].

\*CARTER, R.M. 1968. On the biology and paleontology of some predators of bivalved Mollusca. Palaeogeography, Palaeoclimatology, Palaeoecology 4:29-65, figs. 1-10, pls. 1-2.

\*CARTER, R.M. 1972. Wanganui strata of Komako District, Pohangina Valley, Ruahine Range, Manawatu. Journal of the Royal Society of New Zealand 2(3):293-324, figs. 1-11.

CARTERET, N. de. 1993. Niue Island adventures. Hawaiian Shell News 41(2):12, 2 unnumbered figs.

\*CHAPMAN, F. 1926. Geological notes on Neumerella, and the section from Bairnsdale to Orbost. Proceedings of the Royal Society of Victoria NS, 38:125-142, figs. 1-

2, pl. 10.

CHARTER, B. 1988. Shell wealth of Mina Qaboos. Hawaiian Shell News 36(6):1, 7, 1 unnumbered fig.

CLOVER, P.W. 1971. Description of a new cowry from Taiwan. Keppel Bay Tidings 10(2):8, 2 unnumbered figs.

CLOVER, P.W. 1988. Fakes or works of art? Hawaiian Shell News 36(12):13, 1 unnumbered fig.

COOK, B. 1991. Recent finds. Hawaiian Shell News 39(10):6, 2 unnumbered figs.

CORNFIELD, G. 1988. Papua New Guinea and Palau. Hawaiian Shell News 36(1):10.

CORNFIELD, G. 1988. Aboard the yacht *Loreley*. Hawaiian Shell News 36(10):1, 3 unnumbered figs.

CORNFIELD, G. 1988. Idyllic islands and dynamite. Hawaiian Shell News 36(11):3-4, 3 unnumbered figs.

CORNFIELD, G. 1988. Shell shops of Cebu. Hawaiian Shell News 36(12):9, 2 unnumbered figs.

CORNFIELD, G. 1992. Further adventures of *Loreley*. Hawaiian Shell News 40(12):6-7, figs. 1-9.

COSSIGNANI, T., V. COSSIGNANI, A. Di NISIO & M. PASSAMONTI. 1992. Atlante delle conchiglie del medio Adriatico. Mostra Mondiale Malacologia: Cupra Marittima, Italy. 40 p., 417 figs. + numerous unnumbered figs. [Italian].

COSTA, F.H.A. 1993. O efeito indesejado das cores. Com função de defesa, colorido dos moluscos acaba atraindo depredadores humanos. Ciência Hoje 15(89):60-61, figs. 1-7b [Portuguese].

\*COTTON, B.C. 1952. The Mollusca of the Adelaidean Stage. Appendix IV. Department of Mines Bulletin 27:1-11.

COUCOM, C. 1969-1970. *Cypraea cribraria* from Queensland. Keppel Bay Tidings 8(5):1, 4, 1 unnumbered fig.

\*COVACEVICH C., V. & D. FRASSINETTI C. 1980. El genero *Ficus* en el Mioceno de Chile central con description de *F. gayana* sp. nov. Boletín Museo Nacional de Historia Natural de Chile 37:281-294, figs. 1-10 [Spanish with English abstract].

COWIE, R. 1992. Burch *Cypraea* collection comes to Bishop Museum. Hawaiian Shell News 40(2):9.

CRAM, D. 1973. *Notocypraea*--Valid species and variations. Australian Shell News 4:6-7, figs. 1-4, 12 unnumbered figs.

\*CRESPIN, I. 1926. The Geology of Green Gully, Keilor, with special reference to the fossiliferous beds. Proceedings of the Royal Society of Victoria NS, 38:100-124, figs. 1-2, pls. 7-9.

CURREY, J.D. 1975. A comparison of the strength of

echinoderm spines and mollusc shells. Journal of the Biological Association of the United Kingdom 55:419-424, figs. 1-2.

CURRIN, N. 1971. *Cypraea* jackpot!!! The Festivus 2(1):10.

CURTIS, F. 1966. Molluscan species from early southern California archaeological sites. Bulletin of the Southern California Academy of Sciences 65(2):107-127.

DANCE, S.P. & D. HEPPELL. 1991. Classic Natural History Prints: Shells. Studio Editions Ltd: London. 128 p., 60 unnumbered pls.

\*DAVIDASCHVILI, L.S. 1937. On the ecology of animals of the middle Miocene reefs of Ukranian SSR. Problems of Paleontology, vols. 2-3. Publications of the Laboratory of Paleontology, Moscow University: Moscow, USSR. p. 537-563, figs. 1-2, pls. 1-2 [Russian with English summary].

DAYLE, B. 1988. Happy days. Hawaiian Shell News 36(10):4, 10.

DAYLE, B. 1991. News from the Indian subcontinent. Hawaiian Shell News 39(7):5.

\*DELPEY, G. 1941. Gastéropodes marins: Paléontologie--Stratigraphie. Mémoires de la Société Géologique de France, nouvelle série, 43:1-114, pls. 1-28 [French].

DERJUGIN, K.M. 1950. New data on the taxonomy, morphology, and biology of the genus *Velutina* Flem. (Mollusca, Gastropoda, Lamellariidae). Studies on the Far Eastern Seas of the USSR 2:7-27, pls. 1-5 [Russian].

\*DEVRIES, T.J. 1986. The geology and paleontology of tablazos in northwest Peru [PhD. dissertation]. Ohio State University, Columbus, 964 p.

\*DOLIN, C., L. DOLIN & P. LOZOUET, 1985. Paleocology of some classic Tertiary localities in the Aquitaine and Paris Basins of France. Mississippi Geology 5(4):4-12, fig. 1, pl. 1.

DOMANESCHI, O. & L. PENNA-NEME. 1984. Família Ovulidae Fleming, 1822. Informativo Sociedade Brasileira de Malacologia 39:9-12, fig. 1, 1 unnumbered pl. [Portuguese].

DONNEDU, M. & B. MANUNZA. 1987-1990. La famiglia Cypraeidae Rafinesque, 1815 nel Mar Mediterraneo. Part I, Introduction. Argonauta 3(5-6):311-325, 13 unnumbered figs. [1987]; Part II, *Zonaria pyrum pyrum* (Gmelin, 1791), 4(2-4):18-24, figs. 21-30 [1988]; Part III, *Schilderia achatidea* (Gray in Sowerby, 1837), 5(5-6):67-72, figs. 65-68 [1989]; Part IV, *Erronea caurica* Linneo, 1758, 6(4-5):85-92, figs. 86-95 [1990].

NOTE: Parts I & II were erroneously listed as

"Mauro, D. & Bruno, M." in Groves (1994) due to a printing error in Argonauta. All four parts are correctly listed above with my apologies to the authors.

\*DONOHUE, M.D. & N.S. GORDON. 1967. Fossil Finds in Maryland: A Retrospective Bibliography. University of Maryland Libraries: College Park, Maryland. v + 233 p.

\*Du BAR, J.R. 1962. Check list of Waccamaw and Croatan (Pliocene?) macrofossils of North and South Carolina. Geologic Notes, South Carolina Division of Geology 6(3):25-41.

DUNLAP, E.A. 1989. What's in a name? Or, how split can you be? Hawaiian Shell News 37(3):5.

DUNLAP, E.A. 1989. Shelling on Wake Island update: 1988. Hawaiian Shell News 37(5):9.

\*DURHAM, J.W. 1952. Early Tertiary marine faunas and continental drift. American Journal of Science 250:321-343, fig. 1.

\*DURHAM, J.W. A.R.V. ARELLANO & J.H. PECK, Jr. 1955. Evidence for no Cenozoic isthmus of Tehuantepec seaways. Bulletin of the Geological Society of America 66(8):977-992, figs. 1-3, pls. 1-2.

DURKEE, L. 1991. Shelling on the windy side. Hawaiian Shell News 39(6):12, 4 unnumbered figs.

DY, B.K. 1988. Odd *Cypraea tigris*. Hawaiian Shell News 36(10):8, 1 unnumbered fig.

DY, B.K. 1991. Two beach shells. Hawaiian Shell News 39(2):4, 1 unnumbered fig.

DY, B.K. 1991. Molluscan connections. Hawaiian Shell News 39(11):7, 4 unnumbered figs.

\*EASTON, W.H. 1960. Invertebrate Paleontology. Harper & Brothers Publishers: New York, New York. xii + 701 p., numerous figures.

EMMERICH, K. 1980. Shells on postage stamps around the world. Tropical Philatelic Publishers: Fullerton, California. 110 p., numerous unnumbered figs.

FAINZILBER, M. 1984. Red Sea news. Levantina 48:555-556.

FAINZILBER, M. 1988. Red Sea diver's impression of Hawaii. Hawaiian Shell News 36(1):4, 1 unnumbered fig.

FIENE, P. & M. SEVERNS, 1988. Pohnpei. Hawaiian Shell News 36(2):1, 5-6, 1 unnumbered fig.

\*FINSLEY, C. 1989. A Field Guide to Fossils of Texas. Texas Monthly Press: Austin, Texas. xii + 189 p., 40 figs., 106 pls.

\*FLEMING, C.A. 1967. Cenozoic history of Indo-Pacific and other warm-water elements in the marine Mollusca of New Zealand. Venus 25(3-4):105-117, figs. 1-6.

FRANK, P.W. 1969. Growth rates and longevity of some gastropod mollusks on the coral reef at



Heron Island. *Oecologia* 2(2):232-250, figs. 1-3.

FRIESE, U.E. 1973. Marine Invertebrates. T.F.H. Publications, Ltd.: Neptune City, New Jersey, 240 p., numerous unnumbered figs.

GALINDO, E.S. 1977. Index and register of seashells (with cross references). Librería de Parrúa Hermanos y Cía, S.A., Mexico. xlv + 524 p., numerous unnumbered figs.

GARCIA, E. 1971. In search of *Cypraea mus* Linne, 1758. Keppel Bay Tidings 10(2):5, 1 unnumbered fig.

GERARD, V. 1989. Dredging the Gulf of Trieste. Hawaiian Shell News 37(11):12, 5 unnumbered figs.

GHISELIN, M.T. 1964. Morphological and behavioral concealing adaptations of *Lamellaria stearnsii*, a marine prosobranch gastropod. The Veliger 6(3):123-124, pl. 16.

\*GIBSON-SMITH, J. 1976. A new taxon in the genus *Charonia* (Mollusca: Gastropoda) from the Pliocene of Venezuela, and its implications. Boletín Asociacion Venezolana de Geologia Mineraia y Petroleo 19(1):1-17, figs. 1-2, pl. 1.

\*GIBSON-SMITH, J. & W. GIBSON-SMITH. 1979. The genus *Arcinella* (Mollusca: Bivalvia) in Venezuela and some associated faunas. GEOS 24:11-32, fig. 1, pls. 1-3.

GIUDICE, A. 1990. La famiglia Ovulidae Fleming, 1822 nel Mar Mediterraneo. Argonauta 6(4-5):100-103, figs. 104-105.

GOLIKOV, A.N. & V.V. GULBIN. 1990. On the system of the family Velutinidae Gray, 1842 (Gastropoda). Proceedings of the Zoological Institute, Leningrad 218:105-129, figs. 1-6 [Russian].

GOMERSALL, N. & V. GOMERSALL. 1971. A list of 'true cowries' inhabiting Hervey Bay, Queensland. Australian Newsletter, n.s. 15:1-2, 3 pls.

GOOD, B. 1972. Aquarium observations. The Festivus 3(4):4.

GOTSHALL, D.W. 1987. Marine Animals of Baja California, 2nd ed. Sea Challengers: Monterey, California. 112 p., numerous figs.

GRATECAP, D. & H. ROUSSY. 1989. *Cypraea (Erosaria) gangranosa* Dillwyn, 1817. Xenophora 46:10-13, 4 unnumbered figs. + inside front cover + fig. 5 on back cover.

\*GRATELOUP, J.P.S. de 1840. Conchyliologie fossile des terrains Tertiaires du Bassin de l'Adour, Atlas [Univalves]. Bordeaux, France. 1: xx + 48 non-consecutive pls. [French].

GRIFFITHS, R.J. 1957. Some Malayan cowries. Malayan Nature Journal 11:104-113, figs. 1-8, pls. 52-53.

HADFIELD, M.G. 1976. Molluscs associated with living tropical corals. Micronesica 12(1):133-148.

HAIN, S. 1990. Die beschalten benthischen Mollusken (Gastropoda und Bivalvia) des Weddellmeers, Antarktis. Bericht zur Polarforschung 70:1-181, figs. 1-73, pls. 1-30 [German].

HAMANN, G. 1990. Recent finds. *Cypraea moneta* in the Caribbean? Hawaiian Shell News 38(1):4, 1 unnumbered fig.

HAMANN, G. 1991. Autonomy update. Hawaiian Shell News 39(2):5.

HAMANN, G. 1992. Autonomy recap. Hawaiian Shell News 40(12):7.

\*HATAI, K. & S. NISIYAMA. 1952. Check list of Japanese Tertiary marine Mollusca. Science Reports of the Tôhoku University, Sendai, Japan, 2nd ser. (Geology), Special Volume 3:1-464.

HAYES, B. 1993. From South Africa *Trivia (Pseudotrivia) sharonae* n.sp. (Gastropoda: Velutinoidea: Triviidae). La Conchiglia 25(268):6-7, figs. 1-3.

HAYES, M. 1989. Cowry mantles up or down? Hawaiian Shell News 37(3):3.

HAYWOOD, M. & S. WELLS. 1989. The Manual of Marine Invertebrates. Terra Press: Morris Plains, New Jersey. 205 p., numerous unnumbered figs.

HEALY, J.M. 1988. Sperm morphology and its systematic importance in the Gastropoda. Malacological Review, Supplement 4:251-266, figs. 1-65.

HERMANN, M.G. 1970. Trawling off Stradbroke Island, Queensland. Keppel Bay Tidings 8(6):3, 1 unnumbered fig.

HERNANDEZ T., A.G., J.A. MAVAREZ C. & J. PAPADAKIS V. 1991. Reconocimiento de la clase Gastropoda proveniente de las formaciones Venezolanas Cantaure (Terciario) y Mare (Cuaternario) [abstract]. Primer Congreso Latinoamericano de Malacologia, p. 4 [Spanish].

HERTZ, C.M. 1970. Aquarium observations. The Festivus 1(6):3; 1(10):4.

HIGA, L. 1987-1992. Recent finds. Hawaiian Shell News 35(1):1, 1 unnumbered fig. [1987]; Russian visitor. 40(4):9, 1 unnumbered fig. [1992]; 40(7):3, 1 unnumbered fig. [1992].

HOWARD, F.B. 1969-1970. The "Guero" expedition. Keppel Bay Tidings 8(5):7.

ILLERT, C. 1985. Living clocksprings. Shells and Sea Life 17(8):208, 1 unnumbered fig.

INCHAUSTEGUI, J.M. 1989. Sand tracks on the carpets. Hawaiian Shell News 37(8):1, 4, 4 unnumbered figs.

INCHAUSTEGUI, J.M. 1990. More on Fiji. Hawaiian Shell News 38(1):3-4, 1 unnumbered fig.

- \*ISHIURA, K. (ed). 1992. Miocene fossils from Ikuridani, Yatsuo town, Toyama Prefecture. Special Publications from the Toyama Science Museum 5:1-86, figs. 1-3, pls. 1-19 [Japanese].
- \*ITOIGAWA, J. 1978. Evidence of subtropical environments in the Miocene of Japan. Bulletin of the Mizunami Fossil Museum 5:7-21, figs. 1-6, pls. 2-3.
- \*ITOIGAWA, J., H. SHIBATA, & H. NISHIMOTO. 1974. Geology and paleontology of Mizunami City: Mollusca. Bulletin of the Mizunami Fossil Museum 1:43-204, figs. 1-5, pls. 1-63 [Japanese].
- \*ITOIGAWA, J., H. SHIBATA, H. NISHIMOTO & Y. OKUMURA. 1981. Miocene fossils of the Mizunami Group, central Japan. 2. Mollusks. Monograph of the Mizunami Fossil Museum 3A:1-53, pls. 1-52.
- \*ITOIGAWA, J., H. SHIBATA, H. NISHIMOTO & Y. OKUMURA. 1982. Miocene fossils of the Mizunami Group, central Japan. 2. Mollusks (continued). Monograph of the Mizunami Fossil Museum 3B:1-330.
- \*JANSSEN, A.W. 1969. Beiträge zur Kenntnis des Miocäns von Dingden und seiner Mollusken-Fauna 2. Geologica et Palaeontologica 3:153-193, figs. 1-12, pls. 1-8 [German].
- JOHNSON, S. 1991. Grow your own egg. Hawaiian Shell News 39(6):3, figs. 1-4.
- JOHNSON, S. 1992. Bulla gold on Kwajalllein [sic]. Hawaiian Shell News 40(3):8, 1 unnumbered fig.
- JOHNSON, S. 1993. Sometimes it pays to bear a grunge. Hawaiian Shell News 41(6):5, 2 unnumbered figs.
- \*JONES, D.S. & P.F. HASSON. 1985. History and development of the marine invertebrate faunas separated by the Central American isthmus. In: Stehli, F.G. & Webb, S.D. (eds.), The great American biotic interchange, Chapter 13. Plenum Press: New York. p. 325-355, figs. 1-6.
- \*JUNG, P. 1965. Miocene Mollusca from the Paraguana Peninsula, Venezuela. Bulletins of American Paleontology 49(223):389-652, figs. 1-2, pls. 50-79.
- KAUFFMANN R. & K.-J. GÖTTING. 1970. Prosobranchia aus dem litoral der Karibischen Küste Kolumbiens. Helgoländer Wissenschaftliche Meeresuntersuchungen 21(3):333-398, figs. 1-147 [German].
- KAY, E.A. 1985. About the cowries. In: Burgess, C.M., Cowries of the World. Seacomber Publications: Cape Town, South Africa. p. 4-11, figs. 1-2.
- KERSTITCH, A. 1989. Sea of Cortez besieged. Hawaiian Shell News 37(6):8-9, 6 unnumbered figs.
- \*KING, B. 1980. Getting to know the Kings. Bulletin of the Southern California Paleontological Society 12(1-2):35-36.
- \*KING, L. 1953. A Miocene marine fauna from Zululand. The Transactions of the Geological Society of South Africa 56:59-91, figs. 1-15, pls. 8-12.
- \*KOENEN, A. von. 1894. Das Norddeutsche unter-Oligocän und seine Mollusken-fauna. Lieferung VII: Nachtrag, Schlussbemerkungen und register. Abhandlungen zur Geologischen Spezialkarte von Preussen und den Thüringischen Staaten 10(7):1393-1458, pls. 100-101 [German].
- \*KOGBE, C.A. & E. WOSNY. 1980. Upper Maastrichtian and Paleocene macrofauna from the Iullemmeden Basin (West Africa) and their paleobiogeographic distribution. Annales du Muséum d'Histoire Naturelle de Nice 6:148-185, 1 unnumbered fig., pls. 1-9.
- \*KOLLMANN, H.A. & J.S. PEEL. 1983. Paleocene gastropods from Nûgssuaq, west Greenland. Grønlands Geologiske Undersøgelse Bulletin 146:1-115, figs. 1-259.
- \*KRACH, W. 1981. Baden'skie utwory rafowe na Roztoczu Lubelskim. Polska Akademia Nauk, Oddział w Krakowie. Komisja Nauk Geologicznych. Prace Geologiczne 121:5-115, figs. 1-3, pls. 1-24 [Polish].
- \*KUGLER, H.G. 1938. The Eocene of the Soldado Rock near Trinidad. Boletín de Geología y Minería de Venezuela 2(2-4):202-225, 3 unnumbered figs.
- LAMY, E. 1905. Liste des coquilles de gastropodes recueillies par M. Ch. Gravier dans le Golfe de Tadjourah (1904) [Suite]. Bulletin du Muséum d'Histoire Naturelle 11(3):170-177 [French].
- LAMY, E. 1909. Gastéropodes recueillis par M. L. Diguët dans le Golfe de Californie (1894-1905). Bulletin du Muséum d'Histoire Naturelle 15(5):264-270 [French].
- LAN T.C. 1985 [1986]. A new *Cypraea* from Philippines. Carfax Philippine Shell News 8(3):3, 10-11, figs. 3-8, cover [reprinted from Bulletin of Malacology (Republic of China) 11:1-5, figs. 1-8].
- LANDIN J. 1987. Update. Hawaiian Shell News 35(8):8.
- LAVERNIR, J.E. 1984. *Cypraea spurca* from Cyprus. Levantina 53:614.
- \*LECOINTRE, G., K.J. TINKLER & H.G. RICHARDS. 1967. The marine Quaternary of the Canary Islands. Proceedings of the Academy of Natural Sciences of Philadelphia 119(8):325-344, fig. 1, pls. 1-3.
- LEPETIT, P. 1989. Cypraeidae of the Mediterranean and western Africa. Xenophora 46:4-8, 11



unnumbered figs. + inside front cover + inside back cover + figs. 1-4 on back cover.

\*Le RENARD, J. 1992. Notes de nomenclature sur quelques mollusques caractéristiques de l'Éocène du Bassin de Paris. *Cossmanniana* 1(2-4):1-14 [French with English abstract].

\*Le RENARD, J. & R. von COSEL. 1993. Les espèces fossiles décrites en 1838 dans "Verzeichniss der Conchylien von H.E. Anton." *Cossmanniana* 2(1-2):67-74 [French].

\*LIDDLE, R.A. 1946. The Geology of Venezuela and Trinidad. Paleontological Research Institution: Ithaca, New York. xlvii + 890 p., 27 figs., 40 pls.

LILLICO, S. 1984. Life on the reef. *Hawaiian Shell News* 32(11):12, 2 unnumbered figs.

LILLICO, S. 1987. *Cypraea barbieri*. *Hawaiian Shell News* 35(3):10, 1 unnumbered fig.

LILLICO, S. 1990. Recent finds. The biggest tiger of them all? *Hawaiian Shell News* 38(12):8, 1 unnumbered fig.

LILLICO, S. 1992. I'm glad you asked that! *Hawaiian Shell News* 40(7):3.

\*LINDVEIT, F. & G. LINDVEIT. 1977. Fauna of the Gosport Sand at Little Stave Creek, Alabama. In: Knight, J.E., Offerman, I.D. & Landry, R.M. (eds.), *Fossils & localities of the Claiborne Group (Eocene) of Texas*. Texas Paleontology Series, Publication 1, p. 26-35.

LOPEZ, A. 1988. Ecology is: Shells, turtles, and ... coeds at Chococente Station, Nicaragua. *Hawaiian Shell News* 36(9):3, 6, 2 unnumbered figs.

\*LOZOUET, P. & D. DUTHEIL. 1990. Revue bibliographique. *Cossmanniana* 0:5-22, numerous unnumbered figs. [French].

\*LOZOUET, P. & D. DUTHEIL. 1991. Revue bibliographique. *Cossmanniana* 1:3-12, numerous unnumbered figs. [French].

\*LUDBROOK, N.H. 1978. Quaternary molluscs of the western part of the Eucla Basin. *Geological Survey of Western Australia Bulletin* 125:1-286, figs. 1-7, pls. 1-24.

\*LYONS, W.G. 1990. A Caloosahatchie-age fauna at APAC Mine, Sarasota County, FLorida. In: Allmon, W.D. & Scott, T.M. (eds.), *Plio-Pleistocene stratigraphy and paleontology of south Florida*. Southeastern Geological Society Guidebook 31:10 unnumbered p.

\*LYONS, W.G. 1992. Caloosahatchie-age and younger molluscan assemblages at APAC Mine, Sarasota County, Florida. In: Scott, T.M. & Allmon, W.D. (eds.), *Plio-Pleistocene stratigraphy and paleontology of southern Florida*. Florida Geological Survey Special Publication 36:133-159, figs. 1-16, appendix figs. 1-80.

MacFARLAND, L.R. 1985. Tanzania: Shelling on Dar

es Salaam's offshore reefs. *Shells and Sea Life* 17(7):193-194.

MANJARRES, G.A. 1979. Observaciones sobre los molluscos e inventario de las especies en las Islas del Rosario. *Anales del Instituto de Investigaciones Marinas de Punta de Betin* 11:35-38 [Spanish].

\*MANSFIELD, W.C. 1939. Notes on the upper Tertiary and Pleistocene mollusks of peninsular Florida. *Florida Geological Survey Bulletin* 18:7-75, figs. 1-2, pls. 1-4.

\*MANUNZA, B. & M. DONEDDU. 1989. L'evoluzione della famiglia Cypraeidae. *Quaderni di Malacologia* 1:17-35, figs. 1-12 [Italian].

MARCHE, T. 1989. Aquarium observations. *Hawaiian Shell News* 37(5):3-4, figs. 1-7.

\*MARKS, J.G. 1951. Miocene stratigraphy and paleontology of southwestern Ecuador. *Bulletins of American Paleontology* 33(139):277-432, figs. 1-12, pls. 43-51.

MARROW, L. 1969-1970. Night shelling at Flinders, Western Port Bay, Victoria. *Keppel Bay Tidings* 8(5):3, 2 unnumbered figs.

MARROW, L. 1970. Collecting at East Cape, Papua. *Keppel Bay Tidings* 9(1):3-5, 3 unnumbered figs.

MARTIN, P. 1989. Les *Cypraea* de Polynésie Française. *Rossoniania* 43:3-8, 12 unnumbered figs.

MARTIN, P. & G.T. POPPE. 1989. More news on the Mollusca of Easter Island. *Hawaiian Shell News* 37(11):5-6, 5 unnumbered figs.

MARTINEZ, J. 1991. Martinez on the rocks II. *Hawaiian Shell News* 39(4):8, 1 unnumbered fig.

\*MASUDA, K. 1986. Neogene molluscan biostratigraphy of Tohoku District, Japan. In: Takayasu, T., Ogasawara, K., Masuda, K. & Matoba, Y. (eds.), *Neogene and Quaternary Molluscs from the Akita Oil-field, Japan*. Commemorative Association of Professor Taisuke Takayasu's Retirement and Supporters' Foundation of Mineral Industry Museum, Mining College, Akita University: Japan. p. 78-91.

\*MATSUURA, N. 1985. Successive change of the marine molluscan faunas from Pliocene to Holocene in Hokuriku Region, central Japan. *Bulletin of the Mizunami Fossil Museum* 12:71-158, figs. 1-16, pls. 32-42.

\*MAYER, K. 1857. Versuch einer neuen klassifikation der Tertiärgebilde Europa's. *Verhandlungen der allgemeinen Schweizerischen Gesellschaft für gesammten Naturwissenschaften* 42:165-199 [German].

- McCLOSKEY, L.R. 1973. Development and ecological aspects of the echinospira shell of *Lamellaria rhombica* Dall (Prosobranchia; Mesogastropoda). *Ophelia* 10:155-168, figs. 1-7.
- McDOWALL, J. 1987. Shelling on Kauai, Hawaii's Garden Island. *Hawaiian Shell News* 35(3):5-6, 6 unnumbered figs.
- \*McLELLAN, R.D. 1927. Geology of the San Juan Islands. University of Washington Publications in Geology 2:1-185, figs. 1-10, pls. 1-22.
- McNALLY, D. 1988. Returning shells to their home. *Hawaiian Shell News* 36(2):9.
- MELLO, R. de L.S. 1993. Molluscos do Brasil. 1. Gastropoda, Bivalvia e Scaphopoda, coletados durante as viagens do navio oceanográfico "Almirante Saldanha." Comissão sul 1. Considerações biogeográficas. *Boletim do Museo de Malacologia* 1:31-49, figs. 1-5 [Portuguese].
- MIENIS, H.K. 1976. List of Recent *Cypraea* species not mentioned in "The Living Cowries." *Levantina* 1:2-3.
- MIENIS, H.K. 1976. Note on large *Cypraea testudinaria*. *Levantina* 1:4.
- MIENIS, H.K. 1976. Additional *Cypraea* species not mentioned in "The Living Cowries." *Levantina* 2:17.
- MIENIS, H.K. 1986. The molluscs of the excavation of the early Arabic site of Sde Boqer: Some further remarks. *Levantina* 60:657-662.
- MIENIS, H.K. 1987. A second collection of shells from Neolithic Abou Gosh. *Levantina* 66:695-702.
- MIENIS, H.K. 1990. *Cypraea lentiginosa*: Another odd record of an exotic cowry from the Mediterranean coast of Israel. *De Kreukel* 26(10):119-121.
- \*MIKKELSEN, P.M., R. BIELER, & R.E. PETIT. 1993. A bibliography of Caribbean malacology 1826-1993. *American Malacological Bulletin* 10(2):267-290.
- MILLE-PAGAZA, S.R., A. PÉREZ-CHI & O. HOLGUIN-QUINONES. 1994. Fauna malacologica bentonica de litoral de Isla Socorro, Revillagigedo, Mexico. *Ciencias Marinas* 20(4):467-486, figs. 1-4.
- MINGE, C. 1989. Shelling in Belau. Guam & Micronesia Glimpses 29(4):19-23, 7 unnumbered figs. + cover.
- MINTON, D. 1993. Looking for a shell? Ask Woody and Ron. *Hawaiian Shell News* 41(6):11.
- \*MITCHELL, R.C. 1954. A survey of the geology of Puerto Rico. University of Puerto Rico Agricultural Experiment Station Technical Paper 13:1-167, figs. 1-20.
- MOORE, C.B. 1915. Aboriginal sites on Tennessee River. *Journal of the Academy of Natural Sciences of Philadelphia*, 2nd ser., 16:169-428, figs. 1-98, pls. 5-8.
- \*MOORE, J.C. 1849. On some Tertiary beds in the island of San Domingo: From notes by J.S. Heniker [sic], Esq., with remarks on the fossils. *The Quarterly Journal of the Geological Society of London* 6:39-44.
- \*MOORE, J.C. 1853. Notes on fossil Mollusca and fish from San Domingo. In: Henken, T.S., On some Tertiary deposits in San Domingo. *The Quarterly Journal of the Geological Society of London* 9:129-132.
- MORENO, T. 1986. Fascinating shells of Anilao. *Carfel Philippine Shell News* 8(5):10-11, figs. a-b.
- \*MOUNT, J.D. 1970. Eocene marine invertebrates from a locality in Simi Valley, California. *Bulletin of the Southern California Paleontological Society* 2(11):1-3 [reprinted in 1985 as BSCPS 17(3-4):34-35].
- \*NEVESKAYA, L.A. & A.N. SOLOVYU. 1987. Development and change of molluscs at the Mesozoic-Cenozoic boundary. *New Zealand Geological Survey Report* 117: i + 1-185.
- NICKLÈS, M. 1947. La collection de mollusques testacés marins de l'I.F.A.N. Institut Français d'Afrique noire. Catalogues, I. Dakar, Senegal. 23 p. [French].
- NIESSEN, T.M. 1982. The marine biology coloring book. Barnes & Noble Books: New York. Unnumbered pages, 96 pls.
- \*OKUMURA, K. & T. TAKEI. 1993. Molluscan assemblage from the late Pliocene Ananai Formation, Kochi Prefecture, southwest Japan. *Bulletin of the Mizunami Fossil Museum* 20:133-183, fig. 1, pls. 27-40.
- \*OLEKSYSHYN, J. 1952. Verbreitung und stratigraphie des Miozän in Nordpodolien und Südvolhynien. Dissertation aus dem Geologisch-Palaeontologischen Institut der Universität Innsbruck, Austria, 39 p. [German with English Summary].
- \*OLIVEIRA, A.V. de. 1956. Brazil. In: Jenks, W.F. (ed.), *Handbook of South American geology*. Geological Society of America Memoir 65:3-62, fig. 1, pls. 1-2.
- \*OLSSON, A.A. 1972. Origin of the existing Panamic molluscan biotas in terms of their geologic history and their separation by the isthmian land barrier. *Bulletin of the Biological Society of Washington* 2:117-123.
- \*OLSSON, A.A. 1993. Papers on Neogene mollusks. Paleontological Research Institution, Special Publication 19:1-163 [Reprint of 3 papers by A.A. Olsson all of which feature cypraeoideans and/or trivioideans].
- OPITZ, C.J. 1992. Cowry shells. First Impressions Printing, Inc.: Ocala, Florida. 10 p., 16 unnumbered figs.
- OSORIO, R., C. 1989. La radula de *Cypraea*



- caputdraconis* Melvill, 1888 (Mollusca: Gastropoda). *Revista de Biologica Marina* 24(2):149-153, figs. 1-3 [Spanish].
- \*OZAWA, T. & S. TOMIDA, 1992. The Zushi Faunalate Miocene-early Pliocene warm marine water molluscan fauna of Japan. *Bulletin of the Mizunami Fossil Museum* 19:427-439, figs. 1-3, pl. 59.
- \*PALMER, K.v.W. 1967. A comparison of certain Eocene molluscs of the Americas with those of the western Tethys. *In*: Adams, C.G. & Ager, D.V. (eds.), *Aspects of Tethyan biogeography*, The Systematics Association Publication 7:183-193, fig. 1.
- PARKER, R.H. 1964. Zoogeography and ecology of macro-invertebrates of Gulf of California and continental slope of western Mexico. *In*: van Andel, T.H. & Shor, G.C., Jr., (eds.), *Marine geology of the Gulf of California*. American Association of Petroleum Geologists Memoir 3:331-376, figs. 1-19, pls. 1-10.
- PATCHICK, P.F. 1987. Passage of time makes difference in shell scarcity. *Hawaiian Shell News* 35(4):10.
- \*PEEL, J.S. 1985. Gastropoda. *In*: Murray, J.W. (ed.), *Atlas of Invertebrate Macrofossils*. John Wiley & Sons: New York. Chapter 6, Mollusca, p. 102-113, figs. 6.6.1-6.6.3, pls. 6.6.1-6.6.83.
- PEEL, O. 1988. Natal trawled shells. *Hawaiian Shell News* 36(7):9, 11, 8 unnumbered fig.
- PEEL, O. 1989. Exotica par excellence. *Hawaiian Shell News* 37(5):7.
- PEREK, L. 1990. Shelling in Vung Tau, Vietnam. *Hawaiian Shell News* 38(11):3, 5, 7, 12 unnumbered figs.
- \*PEREZ NIETO, H. 1965. Lista preliminar de los moluscos marinos del Plioceno de las Capas de Cumana, Cerros de Caguire Cumana, Venezuela. *Lagena* 7:11-21 [Spanish].
- \*PESKA, F. 1975. Early Pleistocene invertebrates from the Timms Point, San Pedro, California. *Bulletin of the Southern California Paleontological Society* 7(5):59-63, 2 unnumbered figs.
- \*PESKA, F. 1975. A late Pleistocene molluscan fauna from Costa Mesa, California: Preliminary report. *Bulletin of the Southern California Paleontological Society* 7(11): 141-145, 2 unnumbered figs.
- PETUCH, E.J. 1976. An unusual molluscan assemblage from Venezuela. *The Veliger* 18(3): 322-325, figs. 1-8.
- \*PETUCH, E.J. 1982. Geographical heterochrony: Contemporaneous coexistence of Neogene and Recent molluscan faunas in the Americas. *Palaeogeography, Palaeoclimatology, Palaeoecology* 37:277-312, figs. 1-12.
- \*PETUCH, E.J. 1982. Paraprovincialism: Remnants of paleoprovincial boundaries in Recent marine molluscan provinces. *Proceedings of the Biological Society of Washington* 95 (4):774-780, figs. 1-3.
- \*PETUCH, E.J. 1982. Notes on the molluscan paleoecology of the Pincrest beds at Sarasota, Florida with the description of *Pyrullia*, a stratigraphically important new genus (Gastropoda: Melongenidae). *Proceedings of the Academy of Natural Sciences of Philadelphia* 134:12-30, figs. 1-3, pls. 1-3.
- \*PETUCH, E.J. 1987. The Florida Everglades: A buried pseudoatoll? *Journal of Coastal Research* 3(2):189-200, figs. 1-9.
- \*PETUCH, E.J. 1990. The Pliocene pseudatoll of southern Florida: A template for the evolution of the Everglades. *In*: Allmon, W.D. & Scott, T.M. (eds.), *Plio-Pleistocene stratigraphy and paleontology of south Florida*. Southeastern Geological Society Guidebook 31:11 unnumbered p., figs. 1-2.
- \*PETUCH, E.J. 1992. The Pliocene pseudatoll of southern Florida and its associated gastropod fauna. *In*: Scott, T.M. & Allmon, W.D. (eds.), *Plio-Pleistocene stratigraphy and paleontology of southern Florida*. Florida Geological Survey Special Publication 36:101-116, figs. 1-4.
- \*PETUCH, E.J. 1993. Patterns of gastropod extinction in the Plio-Pleistocene Okeechobean Sea of southern Florida. *In*: Zullo, V.A., Harris, W.B., Scott, T.M., & Portell, R.W. (eds.), *The Neogene of Florida and adjacent regions*. Florida Geological Survey Special Publication 37:73-85, figs. 1-71.
- PIC, M. 1992. A visit to the Red Sea. *Hawaiian Shell News* 40(2):1, 4-5, 7, figs. 1-5.
- PILSBRY, H.A. & H.N. LOWE. 1932. West Mexican and Central American mollusks collected by H.N. Lowe, 1929-31. *Proceedings of the Academy of Natural Sciences of Philadelphia* 84:33-144, figs. 1-7, pls. 1-17.
- \*PITT, W. & W.S. BARNETT. 1979. Some relationships of fossil Gatun gastropods to their Recent counterparts through the use of fluorescence [abstract]. *Western Society of Malacologists Annual Report* 11:10.
- PLUMB, N. 1970. Trawling for shells in Keppel Bay. *Keppel Bay Tidings* 8(6):1, 6, 2 unnumbered figs.
- POMPEY, S.L. 1973. Does environment affect cowry basal coloration? *Of Sea & Shore* 4(3):153.
- PONDER, W.O. & A. WARÉN. 1988. Classification of the Caenogastropoda and Heterostropha-A list of the family-group names and higher taxa. *Malacological Review, Supplement* 4:288-326.

- \*PORTELL, R.W., K.S. SCHINDLER & G.S. MORGAN. 1992. The Pleistocene molluscan fauna from Leisey Shell Pit 1, Hillsborough County, Florida. *In*: Scott, T.M. & Allmon, W.D. (eds.), Plio-Pleistocene stratigraphy and paleontology of southern Florida. Florida Geological Survey Special Publication 36:181-194, figs. 1-2.
- \*POWELL, C.L., II. 1988. The Miocene and Pliocene Imperial Formation of southern California and its molluscan fauna: An overview. Western Society of Malacologists, Annual Report 20:11-18, fig. 1.
- PURTYMUN, B. 1993. Hotcakes and hot shells--Our first day on Majuro Atoll. *Hawaiian Shell News* 41(12):10-11, 3 unnumbered figs.
- QUIRK, S.J.G. & C.S. WOLFE. 1974. Seashells of Hawaii. WW Distributors Ltd.: Honolulu, Hawaii. 32 p., 42 unnumbered figs.
- RAMOS G., H. & G. ROBAINA G. 1994. Contrabucion al conocimiento de los moluscos gasteropodos y palecipodos de la Bahia de Mochima, Edo. Sucre, Venezuela. Sociedad de Ciencias Naturales La Salle Memoria 54(141):95-106, fig. 1 [Spanish].
- \*RANSOM, J.E. 1964. Fossils in America. Harper & Row Publishers: New York. xii + 402 p., numerous unnumbered figs
- RAYBAUDI MASSILIA, L. 1993. What does it mean? *World Shells* 4:104.
- RAYBAUDI MASSILIA, L. 1993. Last minute. *World Shells* 7:88.
- RAYBAUDI MASSILIA, L. 1993. *Nesyocypraea* [sic] *teramachii* Kuroda, 1938. New *splendida* form from New Caledonia (?). *World Shells* 7:92-93, figs. 1-5.
- RAYBAUDI MASSILIA, L. 1993. Romance in Hawaii. *World Shells* 7:94.
- REISH, D.J. 1972. Marine life of southern California: Emphasizing marine life of Los Angeles and Orange counties. Privately published. vii + 164 p., 448 figs.
- RENAUD, M.L. 1971. Aspects of the biology and ecology of *Cypraea moneta* of Eniwetok Atoll, Marshall Islands. M.S. thesis, University of Hawaii.
- REYES, C.W. 1985. Apo Reef nostalgia. *Carfel Philippine Shell News* 8(2):6-7, 6 unnumbered figs.
- RICHARDS, A. 1988. Shelletters. *Hawaiian Shell News* 36(1):4.
- \*RICHARDS, A. 1988. Collecting fossils in France. *Hawaiian Shell News* 36(1):7, 3 unnumbered figs.
- RICHARDS, A. 1989. Goodies galore. *Hawaiian Shell News* 37(2):4-5, 11, 9 unnumbered figs.
- RICHARDS, A. 1989. Kimbe Harbor dredgings. *Hawaiian Shell News* 37(12):9, 1 unnumbered fig.
- \*RICHARDS, H.G. 1955. The geological history of the Cayman Islands. *Notulae Naturae* 284:1-11, figs. 1-3.
- ROBERTSON, R. 1971. Scanning electron microscopy of planktonic larval marine gastropod shells. *The Veliger* 14(1):1-12, pls. 1-9.
- ROSENBERG, S. 1988. Diving the lava tubes of Hawaii. *Sea Frontiers* 34(2):100-105, 13 unnumbered figs.
- ROUSSY, H.P. 1990. Recent finds. *Hawaiian Shell News* 38(2):12, 2 unnumbered figs.
- ROWETT, C.L. 1957. A Quaternary molluscan assemblage from Orleans Parish, Louisiana. *Transactions of the Gulf Coast Association of Geological Societies* 7:153-164, figs. 19.
- RUPERT, E. & R. FOX. 1988. Seashore animals of the southeast. University of South Carolina Press: Columbia, South Carolina. 429 p., 317 black & white figs., 101 color figs.
- RUTHERFORD, L. 1969-1970. A *ziczac* for Mothers' Day. *Keppel Bay Tidings* 8(5):3-4, 1 unnumbered fig.
- RUTHERFORD, L. 1970. Don't disregard an *annulus*. *Keppel Bay Tidings* 8(6):3.
- RUTHERFORD, L. 1970. *Arabica histrio*. *Keppel Bay Tidings* 8(6):5.
- RUTHERFORD, L. 1970. Club trip to Middle Island. *Keppel Bay Tidings* 8(6):7.
- RUTHERFORD, L. 1970. A day on Halfway Island. *Keppel Bay Tidings* 9(1):7.
- RUTHERFORD, L. 1970. The thrill of a new find. *Keppel Bay Tidings* 9(4):8, 1 unnumbered fig.
- RUTHERFORD, L. 1970-1971. Still more about *Cypraea kieneri*. *Keppel Bay Tidings* 9(5):6, figs. 1-8.
- \*RUTSCH, R. von. 1942. Die mollusken der Springvale-Schichten (Obermiocaen) von Trinidad British-West-Indien). *Verhandlungen der Naturforschenden Gesellschaft, Basel* 54:96-182, figs. 1-2, pls. 2-8 [German].
- SAGE, W. 1987. News of new species. *Hawaiian Shell News* 35(2):11, 1 unnumbered fig.
- SCHOENBERG, O. 1987. Aquarium photography. *Hawaiian Shell News* 35(7):5, 4 unnumbered figs.
- SCHOENBERG, O. 1988. Savai'i--off the main road. *Hawaiian Shell News* 36(8):3-4, 3 unnumbered figs.
- \*SCHUCHERT, C. 1935. Historical Geology of the Antillean-Caribbean Region or the Lands Bordering the Gulf of Mexico and the Caribbean Sea. Hafner Publishing Company, Inc.: New York. xxvi + 811 p., 107 figs.
- SCOTT, B. 1969-1970. Beginners' bother. *Cypraeidae*. *Keppel Bay Tidings* 8(5):2, 1 unnumbered fig.
- SCOTT, B. 1970. Beginners' bothers. *Bistolida kieneri*



- schneideri* (Schilder & Schilder) 1938 and *Bistolida hirundo cameroni* (Iredale) 1939. Keppel Bay Tidings 9(1):3, 1 unnumbered fig.
- SCOTT, B. 1970. Club outing to North Keppel Island. Keppel Bay Tidings 9(2):2.
- SCOTT, B. 1970. *Cypraea guttata* from Queensland. Keppel Bay Tidings 9(4):1-2, 2 unnumbered figs.
- SCOTT, D. 1970. A tale of two scurras. Keppel Bay Tidings 8(6):4.
- SCOTT, D. 1970. It's easy when you know how. Keppel Bay Tidings 8(6):5.
- SCOTT, D. 1970. An unusual *Cypraea asellus*. Keppel Bay Tidings 9(1):8, 1 unnumbered fig.
- SCOTT, D. 1991. In the shadow of Mount Pinatubo. Hawaiian Shell News 39(11):6.
- SEFTON, N. & S.K. WEBSTER. 1986. Caribbean Reef Invertebrates. Sea Challengers: Monterey, California. iv + 112 p., 195 figs.
- SHASKY, D.R. 1983. An update of mollusks with Indo-Pacific affinities in the tropical eastern Pacific [abstract]. Western Society of Malacologists Annual Report 15:13.
- \*SIEBER, R. 1958. Die Tortonfauna von Steinabrunn bei Drasenhofen (Bez. Mistelbach, N.-Ö.). Sonderabdruck aus den Verhandlungen der Geologischen Bundesanstalt 2:142-155 [German].
- SINGER, B.S. 1986. Sinai revisited--Succoth 1986. Levantina 65:689-692.
- SINGER, B.S. 1993. New finds of Indo-Pacific *Cypraea* on the Israeli Mediterranean coast. Levantina 77-79:3.
- SINGLETON, F.A. 1937. Mollusca. In: Lady Julia Percy Island: Reports of the expedition of the McCoy Society for field investigation and Research. Proceedings of the Royal Society of Victoria NS, 49(2):387-396, pl. 23.
- SNEIDER, S. 1992. Another example of autonomy in marine gastropods. Hawaiian Shell News 40(9):12, 2 unnumbered figs.
- SNEIDER, S. 1993. Observations. Hawaiian Shell News 41(6):4.
- SOEMODIHARDJO, S. 1965. Notes on the radula of some species of Cypraeidae. Marine Research in Indonesia 7:1-21, figs. 1-10, pls. 1-2.
- SPIGHT, T.M. 1976. Census of rocky shore prosobranchs from Washington and Costa Rica. The Veliger 18(3):309-317, fig. 1.
- \*SQUIRES, R.L. 1986. New occurrences of the Tethyan gastropod *Velates perversus* in the early Eocene of California [abstract]. Western Society of Malacologists Annual Report 18:28.
- \*SQUIRES, R.L. 1986. Early Eocene, a time of influx of old world Tethyan gastropods into California [abstract]. Geological Society of America Abstracts with Programs 18(2):188-189.
- \*SQUIRES, R.L. & R.A. DEMETRION. 1990. New Early Eocene marine gastropods from Baja California Sur, Mexico. Journal of Paleontology 64(1):99-103, figs. 1-2.
- \*STANLEY, S.M. 1987. Extinction. Scientific American Books, Inc.: New York, New York. xi + 242 p., numerous unnumbered figs.
- STAPLIN, F.L. 1992. Shell development in *Cypraea lynx*. Hawaiian Shell News 40(11):6.
- STEARNS, R.E.C. 1872. On the habitat and distribution of the west American species of Cypraeidae, Triviidae and Amphiperasidae, being corrections to Mr. Roberts' catalogues of the "Porcellanidae" and Amphiperasidae. Proceedings of the California Academy of Sciences, 1st. ser., 4:186-189.
- STEINBECK, J. & E.F. RICKETTS. 1941. Sea of Cortez. A leisurely journal of travel and research. Paul P. Appel: Mt. Vernon, New York. x + 598 p., 40 pls.
- \*STUMP, T.E. 1972. Stratigraphy and paleontology of the Imperial Formation in the western Colorado Desert. M.S. thesis, California State University, San Diego, x + 132 p., 13 figs., 1 pl.
- \*TALAVERA, F.G., S.J. KARDAS, Jr., & H.G. RICHARDS. 1978. Quaternary marine mollusks from Tenerife, Canary Islands. The Nautilus 92(3):97-102, figs. 1-16.
- \*TESSIER, F. 1952. Contributions à la stratigraphie et à la paléontologie de la partie ouest du Sénégal (Crétacé et Tertiaire). Université d'Aix-Marseille, France. 1:1-269, pls. 1-14; 2:273-569, pls. 15-40 [French].
- THOMPSON, T.E. 1969. Acid secretion in Pacific Ocean gastropods. Australian Journal of Zoology 17(5):755-764, figs. 1-9.
- THORSSON, W.M. 1990. Hawaiian shell observations. Part 1. Background. Hawaiian Shell News 38(9):1, 4, 4 unnumbered figs.; Part 2. Preservation of data. 38(10):3, 9, 1 unnumbered fig.
- THORSSON, W.M. 1992. *Platydoris* species no. 1. Hawaiian Shell News 40(12):3-4, figs. 1-6.
- THORSSON, W.M. 1993. Studying shells with photography. Hawaiian Shell News 41(11):7, 1 unnumbered fig.
- \*TOMIDA, S. 1989. Fossil molluscan assemblage from the Neogene Senhata Formation around Nokogiriyama, Boso Peninsula, Japan. Mizunami Fossil Museum Bulletin 16:85-108, figs. 1-2, pls. 10-19.

- \*TSURU, T. 1983. Middle Miocene molluscan fauna from the Tôgane Formation in Hamada City, Shimane Prefecture, southwest Japan. *Bouueltin of the Mizunami Fossil Museum* 10:41-83, figs. 1-5. pls. 8-19.
- Van BRUGGEN, A.C. 1966. A note on *Lamellaria mauritania* (Gastropoda, Prosobranchia) in South Africa. *Basteria* 30(1):15-18, figs. 1-5.
- \*VAUGHAN, T.W. & W.P. WOODRING. 1921. Tertiary and Quaternary stratigraphic paleontology. In: Vaughan, T.W., Cooke, W., Condit, D.D., Ross, C.P., Woodring, W.P., & Calkins, F.C. (eds.), *A Geological Reconnaissance of the Dominican Republic. Geological Survey of the Dominican Republic Memoirs* 1. Chapter 6. p. 89-168.
- VERMEIJ, G.J. 1993. *A natural history of Shells*. Princeton University Press: Princeton, New Jersey. 207 p., numerous figs.
- \*VERMEIJ, G.J. & E.J. PETUCH. 1986. Differential extinction in tropical American molluscs: Endemism, architecture, and the Panama land bridge. *Malacologia* 27(1):29-41.
- VERMEIJ, G.J. & G. ROSENBERG. 1993. Giving and receiving: The tropical Atlantic as donor and recipient for invading species. *American Malacological Bulletin* 10(2):181-194.
- VOSS, G.L. & N.A. VOSS. 1955. An ecological survey of Soldier Key, Biscayne Bay, Florida. *Bulletin of Marine Science of the Gulf of Caribbean* 5(3):203-229.
- \*WALDROP, J.S. & D. WILSON, 1990. Late Cenozoic stratigraphy of the Sarasota area. In: Allmon, W.D. & Scott, T.M. (eds.), *Plio-Pleistocene stratigraphy and paleontology of south Florida. Southeastern Geological Society Guidebook* 31:33 unnumbered p., figs. 1-7.
- \*WEAVER, C.E. MS [1959]. Martinez stage in California and Baja California. 640 p., 37 pls.
- WEBB, R. & S. WEBB. 1992. Baja blowout. *Hawaiian Shell News* 40(10):9.
- WEBB, R. & S. WEBB. 1992. Mollusks: Scene through a diver's mask. *Hawaiian Shell News* 40(11):7, 9.
- WEITLAUF, G. 1980. Shallow water shelling in the Red Sea. *Levantina* 24:272-276.
- WEITLAUF, G. 1980. Red Sea shelling. *Levantina* 25:285-287.
- WILSON, B.R. & K. GILLETT. 1971. *Australian Shells*. Charles E. Tuttle Company: Rutland, Vermont. 168 p. 34 figs., 106 pls. + frontis.
- WOLTZ, C.C., Jr. & D.B. BELCHER. 1967. *Collecting cowries in Dar es Salaam*. Privately published. 31 p., figs. 1-44.
- WOOD-ANDERSON, J.A. 1987. Shelletter. *Hawaiian Shell News* 35(12):6.
- WOOD-ANDERSON, J.A. 1988. *fultoni* rebuttal rebutted. *Hawaiian Shell News* 36(6):11.
- \*WOODRING, W.P. 1966. The Panama land bridge as a sea barrier. *Proceedings of the American Philosophical Society* 110(6):425-433, figs. 1-3.
- \*WOODRING, W.P. & M.N. BRAMLETTE. 1950 [1951]. *Geology and paleontology of the Santa Maria District, California*. USGS Professional Paper 222: iv + 1-185, figs. 1-9, pls. 1-23.
- WU, W.-L. & Y.-R. HUANG. 1989. Studies on the radulae of Taiwan molluscs. III. Comparison on the radulae of landsnails and marine molluscs. *Bulletin of Malacology, Republic of China* 14:63-92, figs. 1-24.
- WUYTS, J. & J. KRUYNIERS. 1973. Een zeldzame vormvariëteit van *Cypraea camelopardalis* (Perry, 1811). *Gloria Maris* 11:215-218, 6 unnumbered figs. [Dutch].
- YAMAGUCHI, M. 1991. Molluscan resources from coral reefs. 2. Money cowries. *Aqua-biology* 13:287-291 [Japanese].
- YATES, B. 1972. Radula of *Erosaria lamarckii lamarckii* (Gray, 1825). *Australian Newsletter*, new series, 16:5, figs. 1a-2.
- YATES, L.G. 1890. The Mollusca of Santa Barbara County, California. *Bulletin of the Santa Barbara Society of Natural History* 1(2):37-45.
- YATES, L.G. 1904. Pre-historic California. *Bulletin of the Southern California Academy of Sciences* 3(9):153-158, pls. 1-2.
- YOKOYAMA, K. 1991. Reflections. *Hawaiian Shell News* 39(3):7, 1 unnumbered fig.
- YOKOYAMA, K. 1992. Reflections: upheavals. *Hawaiian Shell News* 40(2):9.
- ZANN, L.P. 1988. *Marine Community Aquarium*. T.F.H. Publications: Neptune City, New Jersey. 416 p., numerous unnumbered figs.
- ZIDEK, J. 1991. Should "The Cowry" be revived? *Hawaiian Shell News* 39(11):5.





# THE FESTIVUS

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Emily H. Vokes
<i>Emerita, Tulane University, New Orleans</i>

Meeting date: third Thursday, 7:30 PM,  
Room 104, Casa Del Prado, Balboa Park, San Diego

## PROGRAM

### Species Identification: A Discussion of Genetic vs Morphologic Methods

Club member Kent Trego will give a shell and animal characters and/or genetic presentation discussing identification of species using characters. He will illustrate his talk with slides.

Big Sale of New Plastic Boxes (see page 70)

Meeting date: May 18, 2000  
Shells of the month: epitoniums

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## CLUB NEWS

### The Auction/Potluck

The affair was a huge success! Over fifty people, members and guests, joined at Wes Farmer's Clubhouse to enjoy another auction/potluck — and enjoy they did. The activities began at 5:00 p.m. with Dave's punch, soft drinks and appetizers as members socialized, perused the auction table with all its treasures, and the silent auction loaded with bargains. At 6:00 p.m. the dinner began with many special dishes prepared for the occasion. The food was delicious and there was an abundance of it.

By 7:00 p.m. when the voice auction began, all were sated and mellow. And what an auction it was! Auctioneer Carole Hertz opened the auction with the usual instructions and then chose as the first shell on the block, a very large, beautiful *Voluta nodiplicata* and the game began. Bidding was fast, fun and furious. Even though the auction began promptly and moved along rapidly, it didn't end until 10:30 p.m. And very few people left early — there were still gems on the table at the very end.

Many members worked hard to make the affair the fun it always is -- the board members that prepare the shells for the auction and set up the venue and those who remain to help with the cleanup. Then there are those friends who donated the shells and related items that make the auction possible. They are: Ed Boyd, Marge & Hugh Bradner, Twila Bratcher-Critchlow, Billee Gerrodette, Carole & Jules Hertz, Linda & Kim Hutsell, John Jackson, Scott Jordan, Kirstie Kaiser, Kay Klaus, Mike Mason, Margaret & Dave Mulliner, Charlotte & Hal Norrid, Rosemary & Frank Pierce, Jeanne & Don Pisor, Chuck Reitz, Dale Roberts, Barry Roth, Nancy & Bill Schneider, Mark Scott, Carol Skoglund, Kent Trego and Charlie Waters. The Club's thanks to you all.

And last but definitely not least — a special thank you goes to Wes Farmer who has willingly hosted the party year after year.

### Too Late for the Roster

Waters, Charles, 2703 Hutchison, Vista, CA 92084, (760) 941-2067.

Trego, Kent B., 441 Ravina St., Apt. #3, La Jolla, CA 92037, (858) 456-7655.

### Change of Address

Levin, Debra J., 1848 Rust Ridge Pl. #202, Corona, CA 92881, (909) 898-3945, E-mail: levinj@att.net

### The 46<sup>th</sup> Annual Greater San Diego Science and Engineering Fair

For the 28<sup>th</sup> consecutive year, the San Diego Shell Club has participated in the Science Fair. This year the Club judges were Terry Arnold (chair), Carole Hertz and Kim Hutsell.

Selected as this year's Club winner was Heather Elizabeth Ibey, a 12<sup>th</sup> grader at Mt. Miguel High School who also won a first place in zoology. Her winning research project is entitled *Mucus trails of marine mollusks — biologically expensive or an investment?*

Elizabeth will choose a book award (offered each year by the Club), either Barnes' *Invertebrate Zoology*, Ricketts, Calvin & Hedgpeth's *Between Pacific Tides* or Morris, Abbott & Haderlie's *Intertidal Invertebrates of California*.

A date will be selected for Elizabeth to present an overview of her winning project to the Club and receive the Club's book award of her choice.

### Plastic Boxes for Sale at the May Meeting

New plastic boxes in a variety of sizes will be available for sale at bargain prices at the May meeting.

As always, all purchases are on the honor system. Bring your money, come early and get some good buys. The sizes are as follows: 1½ x 2 x 1; 2 x 3 x 1¼; 1½ x 1 x ½; 3 x 4 x 1; 1¼ x 1 ½ x ¾; 1 x 1 x ½. Available also, in various sizes, are used plastic boxes which are free to those who want them.

The Club's remaining t-shirts and sweatshirts will also be on sale. The range of sizes is limited, however.

### The Club's New Library Cabinets

The Club now has two of the standing library cabinets in Room 104 in addition to its regular portable library. This will make the club's books more accessible to members as well as providing more space for the Club's growing library holdings. The transfer of some of the books to the new cabinets will take place at the May meeting.



## THE MARQUESAS ISLANDS (FRENCH POLYNESIA) - A PRELIMINARY AND BRIEF ACCOUNT OF MOLLUSCAN FINDS RESULTING FROM A RECENT EXPEDITION

CLAY BRYCE

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The Marquesas Islands have always been remote and, to most travelers, can still be considered well off the beaten track. The islands are 2500 miles south of Hawai'i and 900 miles north east of Tahiti. They are high, steep-sided and volcanic in origin. The islands are divided into two groups, some 60 miles apart, and consist of 15 islands - only 6 are inhabited (Figure 1). Nuku Hiva is the largest island of the archipelago and, like all the rest of the islands, breathtakingly beautiful. There is an airport on the northern part of Nuku Hiva, which is connected to the main village, Taiohae, by a 2 hour, 4-wheel drive trek across the island centre. Taiohae is the administrative capital of the region and has a population of around 2000 people. The present day population of the Marquesas Islands is around 7500 persons.

The islands were originally named, "Te Henau Enana" or "Land of the Men", by the first inhabitants. Their history is long and tragic. It is thought the islands' were originally settled around AD 500 when Polynesians migrated from Tonga and Samoa. European contact, with all its nasties (armed conflict, disease, enforced religion etc), decimated the Marquesan culture and population, which then numbered around 50,000 inhabitants.

The archipelago rests some 9 degrees below the equator on the boundary of two major regions - the east Pacific Ocean and the west Pacific Ocean faunal zones. The fauna of the islands has many species common to Hawai'i and the Tuamotus and is essentially Indo-west Pacific in nature. A degree of endemism, as a result of geographic isolation, is also an important make-up of the molluscan assemblage.

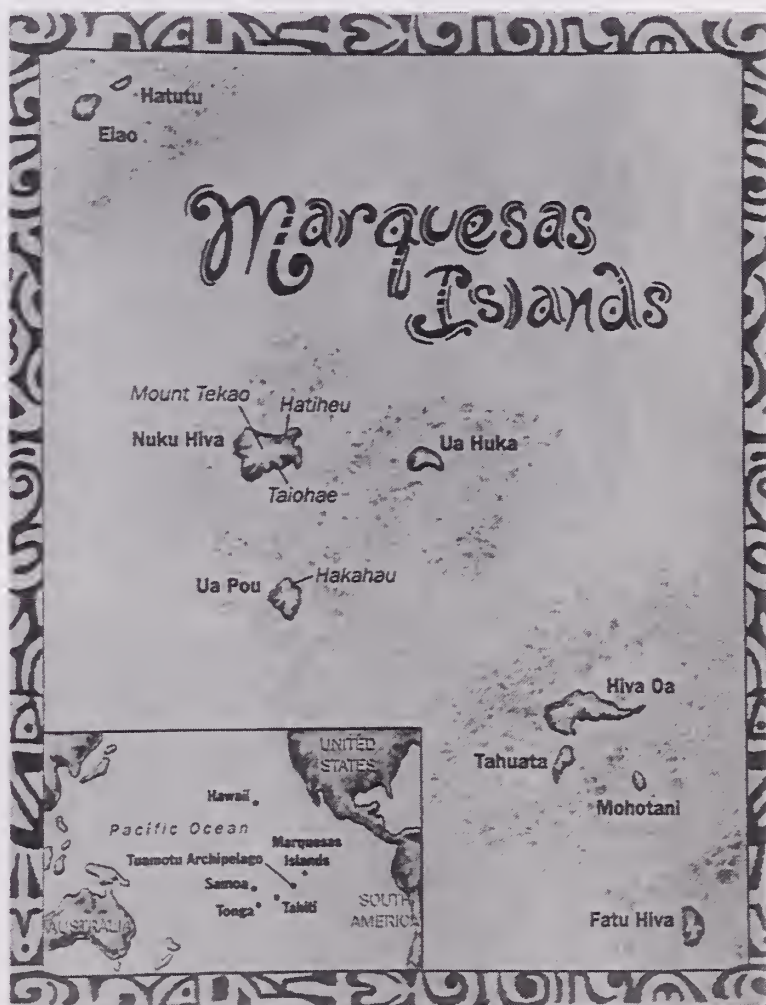


Figure 1. Map of the Marquesas Islands. Photo: H. Morrison.

Although I have not researched the collecting history of the islands it appears that over the last century and a half organized scientific collecting has been spasmodic. In 1848 the sail ship "Sulphur", under the command of Captain Belcher, dredged in Taiohae Bay, Nuku Hiva (Figure 2). Over a hundred years later, in 1964, The National Geographic Society funded the

Smithsonian Institution and the Bishop Museum in a joint expedition to the islands on board the "Pele". During this expedition specimens were collected by various techniques - dredging to 768 feet, scuba to 70 feet, snorkeling and intertidal collecting. Nearly 3000 lots of molluscs were collected representing a wide range of habitats. The Muséum National d'Histoire



Figure 2. Taiohae Bay, Marquesas Islands.

Naturelle, Paris, has made substantial deep water collections from dredging and also some intertidal collections. Private shell collecting has been somewhat limited due to the islands remoteness, expense of getting there and the lack of dive operators. As such, shell material is still highly sought after on the open market.

On the 17th October 1999 our group of 16 people arrived at Nuku Hiva airport from Tahiti under the watchful and attentive care of our travel host, Ann Fielding of Island Explorations. The occupational breakdown of the group is of interest as it consisted of biologists (malacologists, an ichthyologist and several entomologists), institutional associates, holiday makers and private shell collectors. Group members, represented to varying degrees, six institutions; the

Santa Barbara Museum of Natural History, Western Australian Museum, Bishop Museum, University of Connecticut, Smithsonian Institution and the Muséum National d'Histoire Naturelle, Paris.

The original itinerary called for us to visit 3 islands over 15 days with a small contingent staying an extra 6 days to visit the remote island of Eiao. This plan became the victim of strong winds and a denied collecting permit for our visit to Eiao. A revised itinerary resulted in only 2 islands being visited, Nuku Hiva and Ua Poa. All collecting was done either by snorkeling, intertidal collecting or by scuba from a small boat operated by the local dive shop proprietor.



within the Indo-west Pacific region. The species identifications listed below are preliminary but still of interest, either for their rarity, distribution status or endemic uniqueness.

*Cypraea thomasi* Crosse, 1865 - was originally collected during the "Pele" voyage and wrongly labeled as *C. beckii* Gaskoin, 1836. Live collected specimens are known only from the Marquesas on fine-rubble slopes.

*Cypraea astaryi* Schilder, 1971 - a particularly vivid color form (Color plate 1, figure B).

*Cypraea mappa* Linnaeus, 1758 - is rare with a distinctively blurred color pattern.

*Cypraea contaminata* Sowerby, 1832 - first record for the islands.

*Conus bullatus* Linnaeus 1758 - very large examples of the species around 2 inches long (Color plate 1, figure A).

*Conus gauguini* Richard & Salvat, 1973 - found buried in the sand pockets on rocky slopes (Color plate 1, figure C).

*Conus nobilis marchionatus* Hinds, 1843 - albino and chocolate form (Color plate 1, figure \*\*).

*Chicoreus thomasi* (Crosse & Fischer, 1872) - endemic to the islands.

*Lambis crocata pilsbryi* Abbott, 1961 - an endemic subspecies (Figure 3).

*Cyrtulus serotinus* Hinds, 1874 - an endemic fasciolarid (Figure 5)

*Terebra trochlea* Deshayes, 1857 - endemic to the islands (Figure 4).

A collection of opisthobranch mollusks, with accompanying photographs, was also made and is lodged with the Western Australian Museum.



Figure 3. *Lambis crocata pilsbryi* Abbott, 1961.



Figure 4. *Terebra trochlea* Deshayes, 1857.

*Phyllidia tula* Er. Marcus & Ev. Marcus, 1970 (Color plate 1, fig. E). Although the coloring is paler than normal, dissection of the forgut clearly shows the two longitudinal stripes on the oral tube. Known only from Micronesia, this record constitutes a huge range extension.

*Fryeria guamensis* Bruckhorst, 1993. (Color plate 1, fig. F). Marginal coloration is slightly different. Preliminary dissections point to this species. This is another large range extension.

DNA tissue samples from encountered *Cypraea* species were also taken and forwarded to researcher, Chris Meyers for phylogenetic analysis. Three other phyla (fish, echinoderms and insects) were also recorded and selectively sampled for inclusion in institutional collections.

The logistics of the trip were facilitated by several organizers within the participating group and by the diligent planning of Ann Fielding of Island Explorations. The excellent diving services and advice offered by Xavier Curvat of Centre Plongee Marquises are also acknowledged. I would also like to thank all members of the expedition for the effort they made in collecting opisthobranch molluscs after my sudden departure and to John Hoover and Kirstie Kaiser for the photography of the specimens.



Figure 5. *Cyrtulus serotinus* Hinds, 1874.





Color Plate 1. Figures A to F. (A) *Conus bullatus* Linnaeus, 1758, dorsal and apertural views (B) *Cypraea astaryi* Schilder, 1971, group (C) *Conus gauguini* Richard & Salvat, 1973, apertural view (D) *Conus nobilis marchionatus* Hinds, 1843, proboscis extended (E) *Phyllidia tula* Er. Marcus & Ev. Marcus, 1970 (F) *Fryeria guamensis* Brunchhorst, 1993.





A RECORD SIZE FOR THE RAZOR CLAM *SILIQUA PATULA*

JOHN A. BISHOP

3026 Freeman Street, San Diego, Ca. 92106

To the committed malacologist, going on a fishing trip to find shells might not seem too logical, but that is the way it happened. In June of 1999 I went with four fishing friends to a "new" sportsman's lodge located in the town of Sandspit, in the Queen Charlotte Islands, Canada. The accommodation and food were first class but after two days of fishing out of our scheduled five days, the owner's two fishing boats were out of commission. The computer controls on the new motor in one ceased to function and the second became inoperable after smashing the lower unit on a rock. In order to make up for this misfortune he gave us the use of his four-wheel-drive Suburban and an ATV.

The Islands are a verdant naturalists' paradise and the home of the Haida Indians. While driving over the roads we saw many Sitka black-tailed deer, frequent brown bears, and a large number of Bald Eagles. Along the eastern and northern parts of the Islands are miles of sandy and rocky shores ideal for shell collecting and accessible by car.

On one of our days we crossed to the northern island by ferry and drove to the town of Masset. East of Masset is Rose Spit Ecological Reserve famous for its agates and shells. A rutted dirt road goes for about 20 miles along this beach and it was there that we came across a small shack in front of a wilderness home where two young girls were displaying their wares. They had a good selection of local shells but the one that caught my eye was an unusually large specimen of the razor clam *Siliqua patula* (Dixon, 1788) (Figures 1, 2). They gladly parted with it and a number of others for the sum of three American dollars.

On returning home I searched my copy of *Registry of World Record Size Shells*, 2nd edition, by Hutsell, Hutsell & Pisor, 1999, and discovered that this shell is not listed there. Review of current publications such as Abbott & Dance (1986) and Abbott (1974) give its size as 130 mm or 5 to 6 inches respectively. The measurement of this specimen is 172 mm which should make it an undisputed candidate for the record size.



Figure 1. *Siliqua patula* (Dixon, 1788), exterior view of a 172 mm specimen.

An application has been submitted for its inclusion in the Registry.

LITERATURE CITED

ABBOTT, R. TUCKER

1974. American Seashells, 2nd Edition. Van Nostrand Reinhold

Co., New York 663 pp., 24 color pls., 6405 figs.

ABBOTT, R. TUCKER & S. PETER DANCE

1986. Compendium of Seashells (Revised). Madison Publishing Associates, 411 pp., illustrated.

HUTSELL, KIM C., LINDA L. HUTSELL & DONALD L. PISOR.

1999. Registry of World Record Size Shells, 2nd Edition. Snail's Pace Productions, San Diego, Ca. 131 pp.

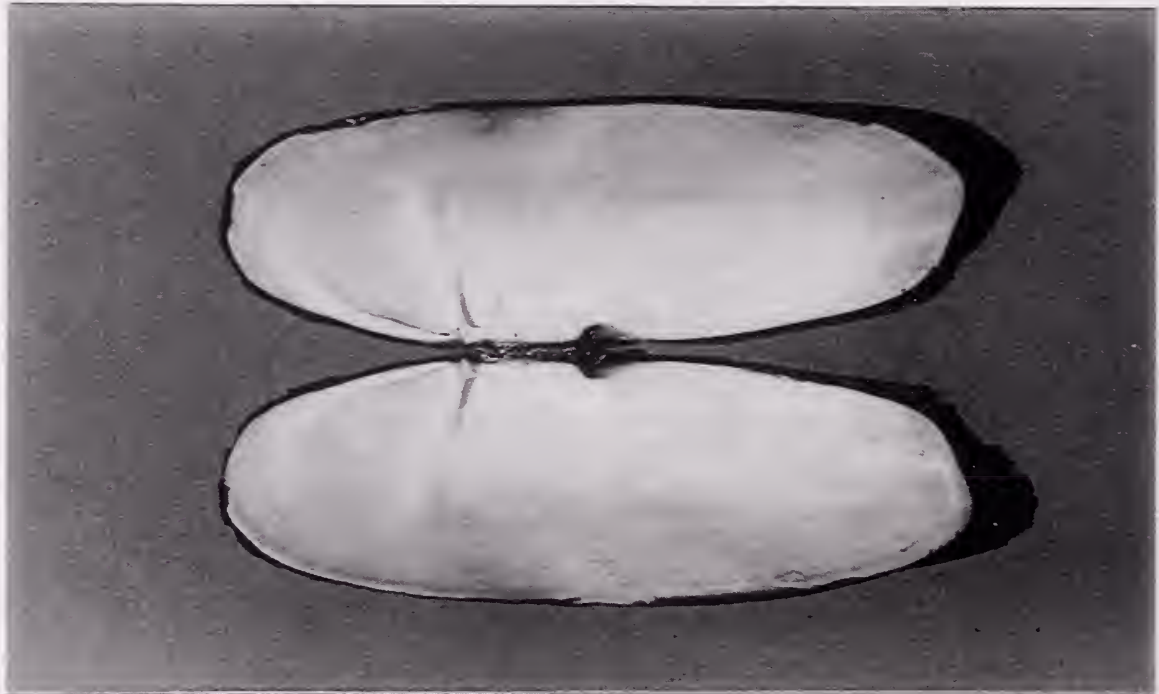


Figure 2. *Siliqua patula*, interior view of specimen in Figure 1.





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Emily H. Vokes
<i>Emerita, Tulane University, New Orleans</i>

Meeting date: third Thursday, 7:30 PM,  
Room 104, Casa Del Prado, Balboa Park, San Diego

## PROGRAM

### Shelling in the Marquesas

Dr. Henry Chaney of the Santa Barbara Museum of Natural History will give highlights of his recent dive

trip to the Marquesas Islands. He will accompany his talk with slides.

Meeting date: June 15, 2000  
Shells of the month: Shells of the Pacific islands

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## CLUB NEWS

Minutes of the  
San Diego Shell Club Meeting - May 18, 2000

In the absence of President Mike Mason, Kim Hutsell called the meeting to order at 7:45 p.m. The minutes of the March meeting were approved as written in *The Festivus*.

Treasurer Linda Hutsell reported that the Club is financially solvent. The Club did very well at this year's auction. More color issues of *The Festivus* are planned, though articles are always needed. Linda also mentioned our new permanent library cases. Larry Lovell recently donated two SIO mollusk catalogs to the library.

Kim Hutsell announced the sale of new plastic boxes at the back of the room at cut-rate prices. He also read a letter from member Roger Clark on a diving trip he is leading to Ketchikan, Alaska and another nearby location that has incredible intertidal collecting. The trip runs from 28 July to 4 August. For further information, contact Roger Clark at <insignis@cdsnet.net>.

Terry Arnold, Chair of the Club's Science Fair judging committee, introduced this year's Club winner, Heather Elizabeth Ibey, who gave an overview of her winning project. She studied the mucus trails of turban, whelks, chitons, and limpets. She found that the mucus trails serve to attract prey for the mollusks to feed on. She was awarded Barnes' *Invertebrate Zoology* for her project prize. She will be studying biology at UCSD this fall.

Kim introduced the speaker for the evening, Kent Trego. Kent's interest is in *Nautilus*, and his presentation included slides of the various species. *Nautilus pompilius* is banded as a juvenile and then is banded and white as an adult shell. Patterns are never found in the albino form from the Philippines. *Nautilus scrobiculatus* has some pattern variation; it has no albino form and has accented growth lines. *Nautilus*

*macrophyllus* has no albino form, has a wide umbilicus, and is a branch formed from *pompilius*. Kent mentioned that molecular data is providing useful information about systematics. Kim commented that this kind of data is revealing that there are not as many subspecies as previously thought. Kent suggested that this varies from family to family. There was a lively debate on this subject; it will require a lot more study.

The winner of the shell drawing was John LaGrange. Thanks to Ron Deems for the delicious refreshments. The meeting was adjourned at 8:45 p.m.

Silvana Vollero

## New Members

Clark, Roger, 1839 Arthur St., Klamath Falls, OR  
97603-4617, (541) 883-7582, E-mail:  
<insignis@cdsnet.net>.

The Bailey-Matthews Shell Museum, P.O. Box 1580,  
Sanibel Island, FL 33957, (941)395-2233, FAX  
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## New Bivalve Book Available at June Meeting

The long-awaited *Bivalve Seashells of Western North America* by Coan, Valentich Scott and Bernard will be available for sale at the June meeting. The profusely-illustrated book documents over 470 species from southern California to northern Alaska, from the intertidal zone to depths of more than 4,500 meters.

## Giant Reprint Sale

There will be a huge sale of reprints of papers on mollusks donated by the June King estate. In addition, there also will be some books on natural history subjects.

## IN MEMORIAM

Rudolf Stohler

Ruth D. Turner



TURRIDAE (MOLLUSCA: GASTROPODA) FROM  
THE SAN FELIPE AREA, BAJA CALIFORNIA, MÉXICO,  
IN THE GEMMELL COLLECTION

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**Abstract:** Forty species of turrids in 24 genera were identified in the Gemmell Collection from the San Felipe area. Nine of the species are reported for the first time in the northern Golfo de California (also referred to herein as "the Gulf").

**Introduction:** Dall (1919), in his major review of the Turridae, described over 89 species from the Panamic Province fauna. Powell (1966) monographed the worldwide turrid genera emphasizing the importance of the posterior anal sinus for classification. McLean *in* Keen (1971), the last major study, was a revision of the eastern Pacific Turridae. Since that time, new Panamic Turridae have been described, but no major review has been undertaken (see Skoglund, 1992).

In our continuing study of the mollusks from the Gemmell Collection, we here present an annotated listing of the Turridae species collected by Gemmell from San Felipe to San Luis Gonzaga in the northwestern Gulf of California from 1965 to 1976. Specimens were either dredged, collected in grunge, from sea star stomachs, or found intertidally. Unless otherwise noted, all material was collected by Gemmell and is in the Gemmell Collection. It is housed, at this time, in the San Diego Natural History Museum.

**Format:** The species are arranged in taxonomic order according to McLean *in* Keen (1971) and Skoglund (1992). An asterisk before a species indicates a range extension. Keen numbers are used to facilitate the finding of the illustrations in Keen (1971). "Figured" indicates the species was not illustrated in the original description, "Also figured" denotes an additional figure reference although it has already been illustrated in the original description.

Each species entry is followed by the original citation, synonyms if present, number of specimens and size range, collecting data for the species, remarks, if any, and current known distribution.

Under **Distribution**, we refer to the "head of the Gulf," "throughout the Gulf," "northern Gulf," or "the Gulf," all referring to the Gulf of California. This is a result of the varying entries in Keen (1971). Hertz wrote to Dr. Keen concerning these different entries, and in a letter written in 1981, Dr. Keen stated, "My

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recollection of what I intended about ranges 'to' and 'into' the Gulf of California is that I deliberately left it a little fuzzy. If I had definite records of species in the northern end of the Gulf, I was careful to say 'to and through' the Gulf. If the documentation was not clear (many older workers would say 'Gulf of Calif.' when they really only meant 'West Mexico'), I left it for future workers to determine how far up the Gulf the long-ranging forms might go ...."

The species which are range extensions are figured herein. All the drawings were done by Gemmell with the aid of a camera lucida attachment to a Wild microscope.

Family TURRIDAE  
Subfamily PSEUDOMELATOMINAE  
Genus *Hormospira* Berry, 1958

*Hormospira maculosa* (Sowerby, 1834)

Proceedings of the Zoological Society of London (for 1833): 135. Figured: Keen #1575.

**Specimens collected:** 39 specimens 19.5-56.2 mm, San Felipe at Ensenada Blanca and Playa Alicia 35 km (22 mi) S of San Felipe, January 1964, intertidal on sand bars, live collected.

**Remarks:** Gemmell's notes state "on sand bars south to Puertecitos ...." Hertz & Hertz, 1975: 36, figured the species and its egg capsules.

**Distribution:** Head of the Golfo de California, México, to Guayaquil, Ecuador, intertidally to 30 m (McLean *in* Keen, 1971); Olsson (1971) extended the depth to 117 m.

Subfamily DRILLINAE Morrison, 1966  
Genus *Kylix* Dall, 1919

*Kylix hecuba* (Dall, 1919)

Proceedings of the United States National Museum 56: 9, pl. 20, fig. 9. Also figured: Keen #1595.

**Specimens collected:** 49 specimens, 6.9-18.6 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, on sand bar on minus 1.5 m (-5 ft) low tide, 26 April 1975.

6 specimens, 6.0-10.0 mm, dredged by fishing boat *Chamizal* I [station C] (31°20'18"N to 31°02'30"N and 114°41'W to 114°48'W), 1-8 km (.75 to 5 mi) offshore, N of Pta. San Felipe, in sand and mud

to embedded rock rubble in 20-48 m (11-26 fm), 28 June 1968.

**Distribution:** Head of the Gulf to Bahía Concepción on west coast of Baja California to Puerto Peñasco, Sonora, México (McLean *in* Keen, 1971); Bahía San Carlos, Sonora (Poorman & Poorman, 1988).

Genus *Drillia* Gray, 1838

*Drillia cunninghamae* McLean & Poorman, 1971

The Veliger 14(1): 95, fig. 14. Also figured: Keen #1619 (holotype).

**Specimens collected:** 3 specimens, 20-22.5 mm, Bahía San Luis Gonzaga, dredged by fishing boat *Chamizal* II [station 10] (29°49'36"N, 114°21'42"W), E side of Isla Willard, 0.8 km (0.5 mi) N of S end of island, in sand and pumice in 18-27 m (10-15 fm), 10 July 1969.

**Distribution:** Sonora from Río Tastiota to Guaymas (McLean *in* Keen, 1971); off Nayarit, (Reguero & García Cubas, 1987); across Gulf to off Isla Danzante in 60-90 m (Skoglund, 1991).

*Drillia roseola* (Hertlein & Strong, 1955)

Bulletin of the American Museum of Natural History 107(2): 221-223, pl. 2, fig. 27. Also figured: Keen #1621 (syntype).

**Synonym:** *Pleurotoma rosea* Sowerby, 1834, not Quoy & Gaimard, 1833.

**Specimens collected:** 3 specimens, 22.5-26.0 mm, dredged by fishing boat *Chamizal* II [station 10] (29°49'36"N, 114°21'42"W), E side of Isla Willard, 0.8 km (0.5 mi) N of S end of island, in sand and pumice in 18-27 m (10-15 fm), 10 July 1969.

**Remarks:** Some specimens of *D. roseola* have spiral lines but they are much finer and not all over as in *D. cunninghamae*. The species was described as a *Cymatosyrinx*.

**Distribution:** Golfo de Tehuantepec, México, Bahía Octavia, Colombia and off Cabo Pasado, Ecuador (Hertlein & Strong, 1955); Head of the Gulf to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971); Bahía San Carlos, Guaymas, Sonora, México (Poorman & Poorman, 1988).

Genus *Globidrillia* Woodring, 1928



*Globidrillia micans* (Hinds, 1843)

Annals and Magazine of Natural History 11: 18.  
Figured: Keen #1630.

**Synonym:** *Elaeocyma aeolia* Dall, 1919.

**Specimens collected:** 394 specimens, 4.6-9.6 mm, collected intertidally at Playa Alicia, 35 km (22 mi) S of San Felipe on minus tides -1.5 m (-5 ft), on sand, 20 May 1967 to April 1968 and May 1971.

**Remarks:** From Gemmell's notes, "Also found in seastar stomachs occasionally."

**Distribution:** Head of the Gulf to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971).

Subfamily TURRINAE  
Genus *Polystira* Woodring, 1928

\**Polystira oxytropis* (Sowerby, 1834)  
(Figure 1)

Proceedings of the Zoological Society of London [for 1833]: 135. Figured: Keen #1648 (holotype of *P. artia*).

**Synonyms:** *Pleurotoma albicarinata* Sowerby, 1870; *Pleuroliria artia* and *P. parthenia* both of Berry, 1957.

**Specimen collected:** 1 specimen, 6.8 mm, dredged by fishing boat *Chamizal II*, [station 10] (29°49'36"N, 114°21'42"W), E side of Isla Willard, Bahía San Luis Gonzaga, in 18-27 m (10-15 fm), in sand and pumice, 10 July 1969.

**Remarks:** This is the first report of the species on the east side of the Baja peninsula.

**Distribution:** Isla Cedros, Baja California, N in Gulf to Bahía Tepoca, Sonora, México, and S to La Libertad, Ecuador (McLean *in* Keen, 1971); Isla Gorgona, Colombia (Cosel, 1984); off Bahía San Carlos, Sonora (Poorman & Poorman, 1988).

Subfamily COCHLESPIRINAE Powell, 1942  
Genus *Knefastia* Dall, 1919

*Knefastia dalli* Bartsch, 1944

Proceedings of the Biological Society of Washington 57: 28. Figured: Keen #1656.

**Specimens collected:** 2 specimens, 45.1 & 55.5 mm, Puertecitos, W side of bay, 28 December 1966, live collected.

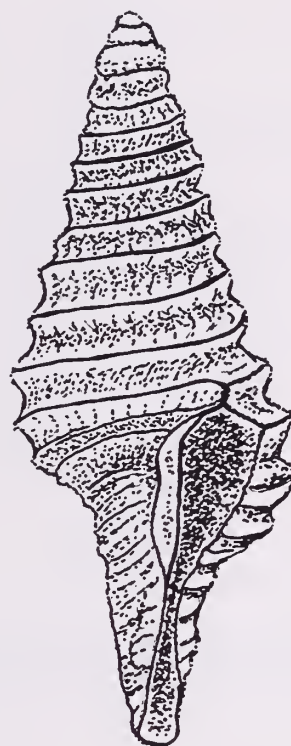


Figure 1. *Polystira oxytropis* (Sowerby, 1834), apertural view of juvenile specimen, 6.8 mm, dredged, San Luis Gonzaga in 18-27 m, 10 July 1969.

5 specimens, 24.0-49.6 mm, Bahía San Luis Gonzaga, 20 April 1966, live collected.

21 specimens, 27.3-63.4 mm, Playa Namar, 8 km (5 mi) S of Agua Chale [Sulphur Mine] to Bahía Willard, San Luis Gonzaga, 1965-1967, live collected.

1 specimen, 57.3 mm, Puertecitos, W side of bay at low tide, March 1965, live collected.

**Remarks:** From Gemmell's notes: "all found on and among mossy rocks ... observed small orange specimens with large brown specimen ... *Knefastia* found bumping in sand around base of rocks north of Puertecitos. In spring March '65 on large boulders bedded in sand clustered copulating both colors [together]. Dark brown periostracum and orange or horn colored."

**Distribution:** Head of the Gulf to Guaymas, Sonora and La Paz, Baja California Sur (McLean *in* Keen, 1971).

Subfamily CRASSISPIRINAE  
Genus *Crassispira* Swainson, 1840

*\*Crassispira maura* (Sowerby, 1834)  
(Figure 2)

Proceedings of the Zoological Society of London [for 1833]: 134. Figured: Keen #1676.

**Synonyms:** *Turricula nigricans* Dall, 1919; *Drillia inaequistriata* Li, 1930; *Crassispira perla* M. Smith, 1947.

**Specimen collected:** 1 specimen, 38.3 mm, Radar Beach, San Felipe, leg. P. Clover, June 1968, collected dead.

**Remarks:** This is the first report of this species from San Felipe. This specimen is now in the Gemmell Collection.

**Distribution:** Bahía de los Angeles, Golfo de California to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971).

*Crassispira unicolor* (Sowerby, 1834)

Proceedings of the Zoological Society of London [for 1833]: 138. Figured: Keen #1679 (holotype of *C. erebus*).

**Synonyms:** *C. erebus* Pilsbry & Lowe, 1932; *C. tangolaensis* Hertlein & Strong, 1951.

**Specimens collected:** 74 specimens, 12.0-26.3 mm, San Felipe, intertidal among rocks, March 1968.

**Distribution:** The species is reported from the head of the Gulf to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971).

*Crassispira bifurca* (E. A. Smith, 1888)  
(Figures 3-7)

Annals and Magazine of Natural History: [series 6] 2(10): 308-309. Figured: Keen #1691.

**Synonym:** *Crassispira flavonodosa* of authors, not Pilsbry & Lowe, 1932.

**Specimens collected:** 108 specimens, 6.8-17.3 mm, Pta. San Felipe and south, among rocks, March 1968.

**Remarks:** Gemmell's notes state "also at Playa Alicia, S of San Felipe."

We had difficulty separating this species from *Pilsbryspira nymphia*, both from the head of the Gulf, although the two species are in different genera. Both species are about the same size and color with sculpture of large tubercles on the periphery and a deep anal sinus. According to McLean *in* Keen (1971: 720), *C.*

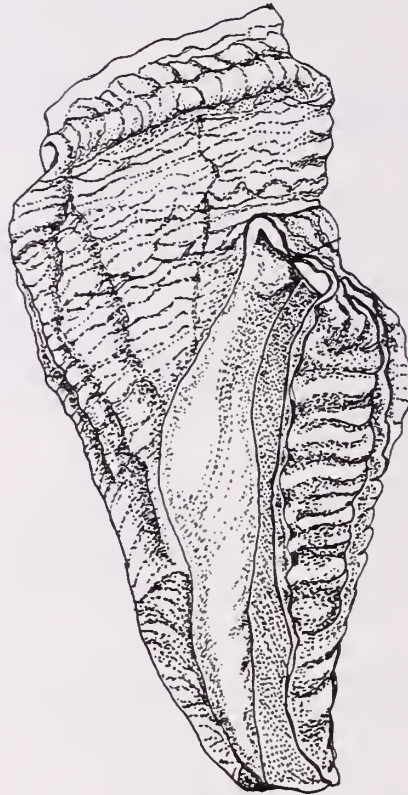
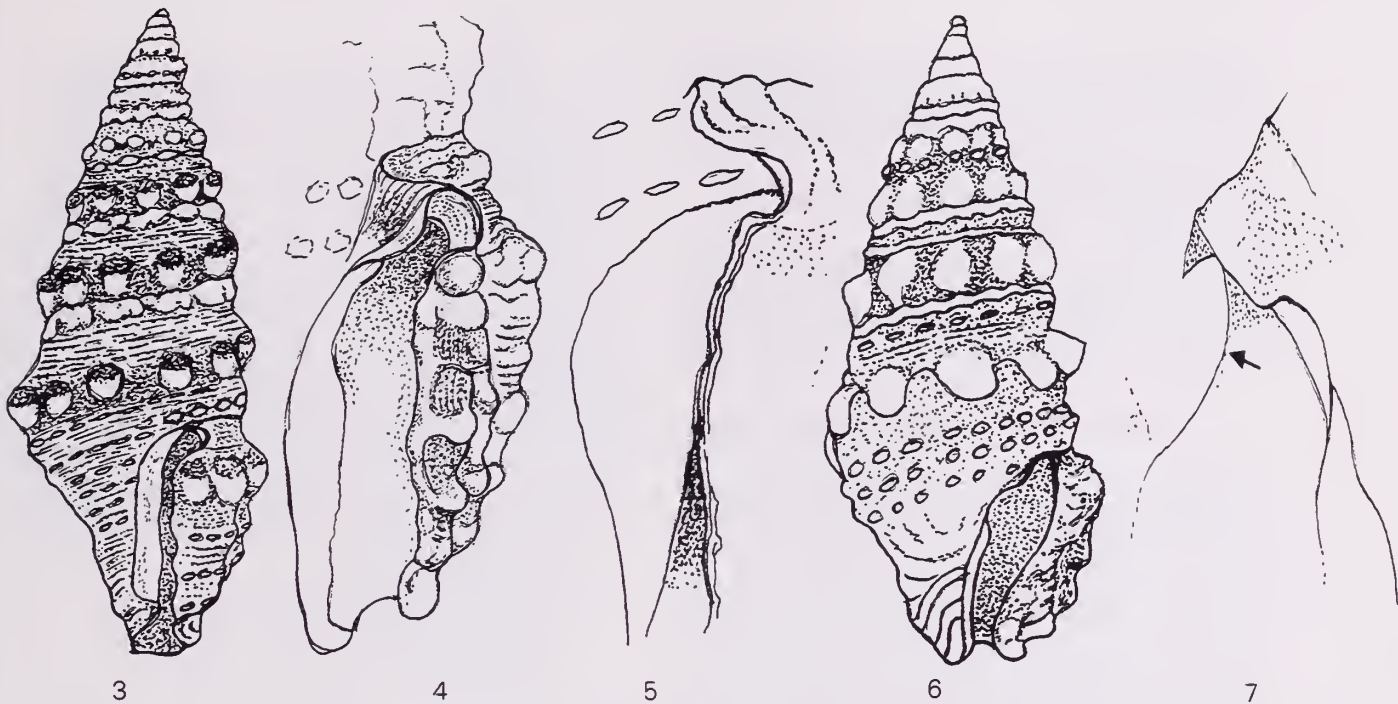


Figure 2. *Crassispira maura* (Sowerby, 1834), detail of aperture of 38.3 mm specimen showing tubercle on parietal wall, Radar Beach, San Felipe, collected dead by P. Clover, June 1968. Gemmell Collection.

*bifurca* has a "parietal callus nearly obstructing the opening" whereas *P. nymphia* has no callus. In specimens with an immature lip, however, this is often not discernible. We found the sculptural details as shown in the annotated drawings most helpful (Figures 3-7). In *Crassispira bifurca* there is a row of large yellowish-white nodes at the periphery of each whorl. Below each node on the body whorl there appears to be an axial riblet which is actually a double row of smaller rounded nodes, hence the name *bifurca*. *Pilsbryspira nymphia*, by contrast, has a row of large bicolored nodes on the periphery which are orange above and white below. Immediately beneath these nodes on the spire is a heavy orange, sinuous cord which appears node-like (Figure 6). On the body whorl the sinuous cord is absent and instead there are rows of disconnected flattened nodes, elongate horizontally.

**Distribution:** Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean *in* Keen, 1971); Guaymas, Sonora, México (DuShane & Poorman, 1967 [as *flavonodosa*]).





Figures 3-7. (3-5) *Crassispira bifurca* (E. A. Smith, 1888), 6.8 mm, Pta. San Felipe, among rocks, March 1968. (3) apertural view (4) detail of aperture (5) detail of sinus showing callus and suture. (6, 7) *Pilsbryspira nymphia* (Pilsbry & Lowe, 1932), 5.5 mm, Campo Uno, San Felipe, November 1971 (6) apertural view of 5.0 mm specimen (7) detail of sinus showing sutural slot and lack of callus.

*Crassispira kluthi* E. K. Jordan, 1936

Contributions from the Department of Geology of Stanford University 1(4): 153, pl. 18, fig. 1 Also figured: Keen # 1699 (holotype of *S. lucasensis*).

**Synonyms:** *Clavatula luctuosa* Hinds, 1843, not *Pleurotoma luctuosa* Orbigny, 1842; *Striospira lucasensis* and *S. tabogensis* both of Bartsch, 1950.

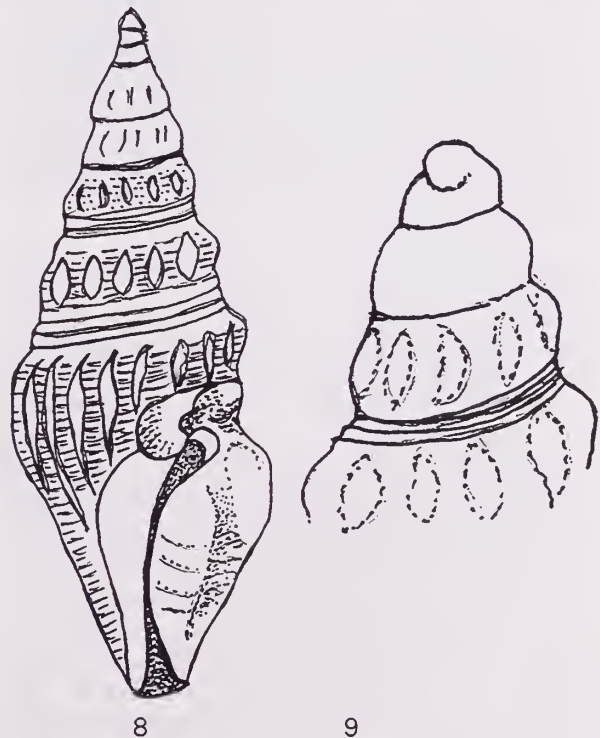
**Specimens collected:** 51 specimens, 11.6-18.0 mm, Pta. San Felipe, between and under stones.

1 specimen, 12.4 mm, San Felipe, June 1969, from seastar stomach.

**Distribution:** Isla Cedros, Baja California, outer coast throughout the Gulf, S to Isla Salango, Ecuador (McLean in Keen, 1971); Guaymas, Sonora (DuShane & Poorman, 1967).

\**Crassispira xanti* Hertlein & Strong, 1951  
(Figures 8, 9)

Eastern Pacific expeditions of the New York Zoological society. XLIII. Mollusks from the west coast of Mexico and Central America. Part X. Zoologica, NY, 36: 74-75, pl. 1, fig. 3. Also figured: Keen #1702 (holotype). **Specimens collected:** 2 specimens, 14.0 & 15.1 mm,



Figures 8, 9. *Crassispira xanti* Hertlein & Strong, 1951, 14.3 mm specimen, dredged by fishing boat, *Chamizal I*, off Agua Chale in 2-3 m, 27 June 1968 (8) apertural view (9) detail of spire.

dredged by fishing boat *Chamizal* I, [stations 4-5] (30°41'N to 30°51'12"N and 114°32'W to 114°41'W), 3-13 km (2-8 mi) off Agua Chale, in 9-18 m (5-10 fm), 27 June 1968.

**Remarks:** This is the first report of this species in the San Felipe area.

**Distribution:** Pta. Lobos, Sonora to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971); Puertecitos, Baja California (DuShane, 1962); Guaymas, Sonora (DuShane & Poorman, 1967).

*Crassispira pluto* Pilsbry & Lowe, 1932

Proceedings of the Academy of Natural Sciences of Philadelphia 84: 49-50, pl. 2, fig. 12. Also figured: Keen #1706 (holotype, left).

**Specimens collected:** 25 specimens, 11.7-19.6 mm, Pta. San Felipe.

**Distribution:** Head of the Gulf to Guaymas, Sonora, México, on the east and Cabo San Lucas on the west (McLean *in* Keen, 1971); Consag Rock, San Felipe (DuShane & Brennan, 1969); Puertecitos (DuShane, 1962); San Luis Gonzaga (DuShane & Sphon, 1968).

Genus *Lioglyphostoma* Woodring, 1928

\**Lioglyphostoma ericea* (Hinds, 1843)  
(Figures 10, 11)

Proceedings of the Zoological Society of London [for 1833]: 39. Figured: Keen #1714.

**Synonyms:** *Glyphostoma sirena* Dall, 1919; *Clathurella erminiana* Hertlein & Strong, 1951.

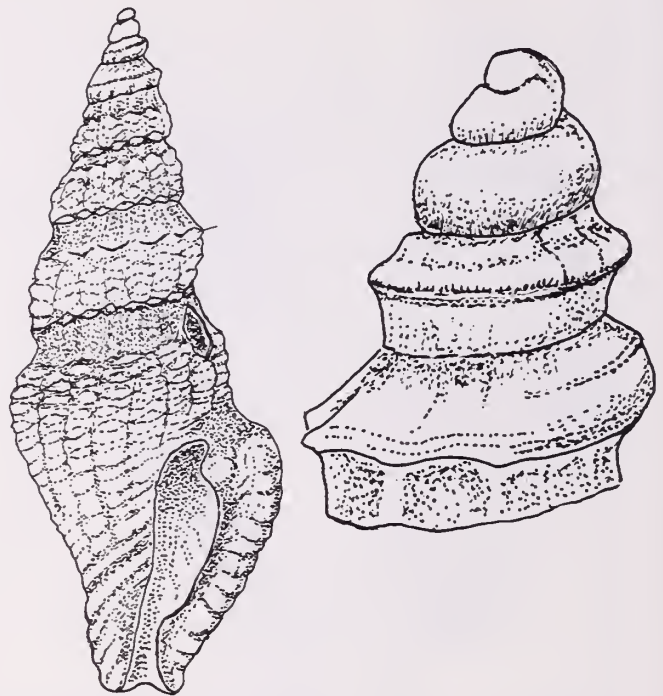
**Specimens collected:** 1 specimen (juv.), 9.0 mm, dredged by fishing boat *Chamizal* II [station 7] (30°04'54"N, 114°34'00"W), W of S end of El Muerto, in sandy grunge in 15 m (8 fm), 9 July 1969.

1 specimen, 10.0 mm, dredged by fishing boat *Chamizal* II [station 10] (29°49'36"N, 114°21'42"W), E side of Isla Willard, 0.8 km (0.5 mi) N of S end of island in fine sand and pumice in 18-27 m (10-15 fm), 10 July 1969.

**Remarks:** This is the first report of the species in the northern Golfo de California.

**Distribution:** Isla Tiburón, Golfo de California to Isla Gorgona, Colombia and the Islas Galápagos in 40-120 m (McLean *in* Keen, 1971).

Genus *Miraclathurella* Woodring, 1928



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Figures 10, 11. *Lioglyphostoma ericea* (Hinds, 1843), 10.0 mm, dredged by fishing boat *Chamizal* II, E side of Isla Willard, San Luis Gonzaga, in 18-27 m in sand and pumice, 10 July 1969 (10) apertural view (11) detail of spire.

*Miraclathurella bicanalifera* (Sowerby, 1834)

Proceedings of the Zoological Society of London [for 1833]: 136. Figured: Keen #1719 (holotype of *Lioglyphostoma acapulcanum*).

**Synonyms:** *Pleurotoma variculosa* Sowerby, 1834; *P. gracillima* Carpenter, 1856; *Lioglyphostoma acapulcanum* Pilsbry & Lowe, 1932.

**Specimen collected:** 1 specimen, 19.9 mm, off Pta. Estrella, San Felipe, in seastar stomach, June 1968.

**Remarks:** Specimen cited in Gemmell, Hertz & Myers (1980: 46) not found.

**Distribution:** Consag Rock, San Felipe, Baja California [as *Clathurella acapulcana*] (DuShane & Brennan, 1969; Gemmell, Hertz & Myers, 1980); to Puerto Utria, Colombia (McLean *in* Keen, 1971).

Genus *Carinodrillia*

*Carinodrillia hexagona* (Sowerby, 1834)

Proceedings of the Zoological Society of London [for 1833]: 139. Figured: Keen #1725 (holotype of *Clathrodrillia pilsbryi*).



**Synonym:** *Clathrodrillia pilsbryi* Lowe, 1935

**Specimens collected:** 31 specimens, 12.7-25.4 mm, San Felipe, intertidal, live collected, May 1976.

37 specimens, 11.0-26.9 mm, Playa Alicia, 35 km (22 mi) S of San Felipe and Ensenada Blanca, San Felipe, intertidal, live collected on outer edges of rocks, May 1967 and April-May 1973.

1 specimen, 13.4 mm, dredged by fishing boat *Chamizal* II, [station 10] (29°49'36"N, 114°21'42"W), E side of Isla Willard, Bahía San Luis Gonzaga, 0.8 km (0.5 mi) N of S end of island, in 18-27 m (10-15 fm) in sand and pumice, 10 July 1969.

**Distribution:** Head of the Gulf to La Libertad, Ecuador (McLean *in* Keen, 1971).

Subfamily STRICTISPIRINAE

Genus *Strictispira* McLean, 1971

*Strictispira stillmani* Shasky, 1971

The Veliger 14(1): 68-69, fig. 3. Also figured: Keen #1728 (holotype).

**Specimens collected:** 7 specimens, 12.0-12.6 mm, Pta. San Felipe and Playa Alicia, 35 km (22 mi) S of San Felipe, 1968, collected live.

25 specimens 12.6-15.4 mm, Pta. San Felipe and S, around small rocks, collected prior to 1969.

**Remarks:** Gemmell's notes state, "alive - San Felipe Point to Puertecitos."

**Distribution:** Head of the Gulf to Bahía de Panamá (McLean *in* Keen, 1971); Manabí Province, Ecuador (Shasky, 1984).

Subfamily ZONULISPIRINAE

Genus *Zonulispira* Bartsch, 1950

*Zonulispira grandimaculata* (C. B. Adams, 1852)

Catalogue of Shells Collected at Panama. pp. 143-144. Figured: Turner (1956, vol. 2(20), pl. 7, fig. 9); Keen #1731.

**Synonyms:** *Crassispira dirce* Dall, 1919; *Z. reigeni* Bartsch, 1950.

**Specimens collected:** 38 specimens, 8.0-20.0 mm, Pta. San Felipe, live collected.

**Remarks:** Gemmell's notes indicate specimens found

from San Felipe to Puertecitos "not common."

**Distribution:** Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean *in* Keen, 1971).

Genus *Compsodrillia* Woodring, 1928

*Compsodrillia albonodosa* (Carpenter, 1857)

Catalogue of the Collection of Mazatlan Shells ... p. 397. Figured: Keen #1733.

**Synonym:** *Carinodrillia halis soror* Pilsbry & Lowe, 1932.

**Specimens collected:** 7 specimens, 6.4-9.6 mm, Pta. Estrella, San Felipe, May 1968.

109 specimens, 5.0-18.7 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, live on sand at minus 1 m (-4 ft) tide, March 1976.

92 specimens, 6.7 - 18.7 mm, San Felipe, live on extreme minus tides, 19 April 1975.

1 juvenile specimen, 8.0 mm, dredged by fishing boat *Chamizal* I, [station A] (30°41'12"N, 114°40'01"W), 3.2 km (2 mi), off Pta. Estrella, San Felipe, on sand in 9 m (5 fm) from seastar stomachs, 27 June 1968.

**Distribution:** Consag Rock, San Felipe (DuShane & Brennan, 1969); Guaymas, Sonora (Dushane & Poorman, 1967); Gulf to Bahía Banderas (McLean *in* Keen, 1971); Pta. Estrella, San Felipe from seastars (Gemmell, Hertz & Myers, 1980).

*Compsodrillia alcestis* (Dall, 1919)

Proceedings of the United States National Museum 56(2288): 18, pl. 5, fig. 6. Also figured: Keen #1734 (holotype).

**Synonym:** *Carinodrillia dariena* Olsson, 1971.

**Specimen collected:** 1 specimen, 5.0 mm, dredged by fishing boat *Chamizal* I, [station A] (30°41'N to 30°51'12"N and 114°32'W to 114°41'W), Pta. Estrella, San Felipe, offshore on sand in 9-18 m (5-10 fm), from seastar stomachs, 27 June 1968.

**Remarks:** See Gemmell, Hertz & Myers (1980: 46, fig. 42).

**Distribution:** Guaymas, Sonora, to Puerto Utria, Colombia (McLean *in* Keen, 1971); Consag Rock, San Felipe (DuShane & Brennan, 1969); Pta Estrella, San

Felipe (Gemmell, Hertz & Myers, 1980).

*Compsodrillia haliplexa* (Dall, 1919)  
(Figures 12, 13)

Proceedings of the United States National Museum 56(2288): 19, pl. 5, fig. 5. Also figured: Keen #1739.

**Specimens collected:** 2 specimens, 19.4 & 24.2 mm, Campo Uno, Pta. San Felipe, in mud at minus 1m (-4 ft) tide, 16 January 1968.

2 specimens, 25.0 & 26.3 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, one dead, one collected living, 17 March 1968.

1 specimen, 12.7 mm, Playa Laguna, San Felipe, leg. P. Clover, dead collected, Gemmell Collection, 17 March 1968.

1 specimen, 15.5 mm, Bahía San Felipe, October 1971.

**Distribution:** Bahía Magdalena, outer coast of Baja California, through the Gulf and S to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971).

*Pilsbryspira* Bartsch, 1950

\**Pilsbryspira bacchia* (Dall, 1919)  
(Figures 14, 15)

Proceedings of the United States National Museum 56(2288): 25, pl. 6, fig. 1. Also figured: Keen #1755.

**Specimens collected:** 82 specimens, 6.0-14.5 mm, Pta. San Felipe to Playa Alicia, 35 km (22 mi) S of San Felipe, around and under stones, in mud, collected living, 1967, 1968, 1973.

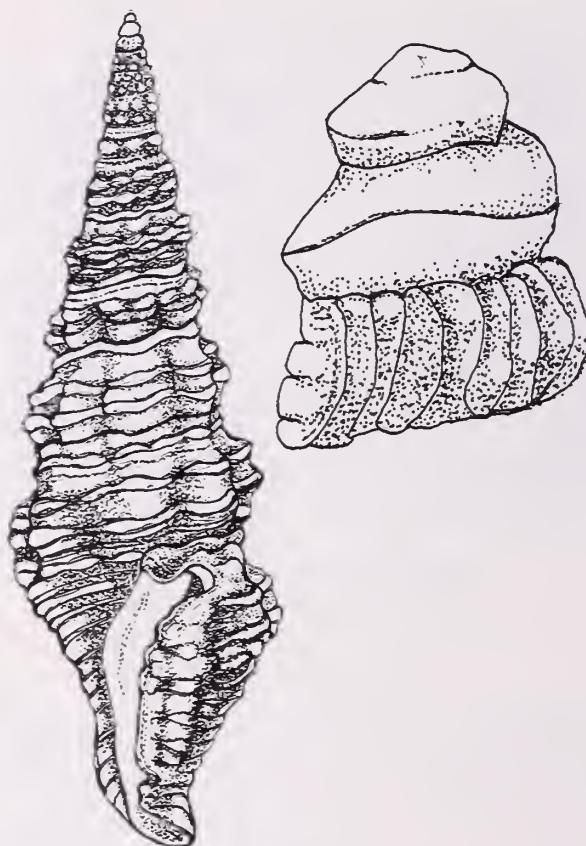
**Remarks:** Gemmell's notes state, "collected all year round" intertidally. This is the first report of the species living at San Felipe.

**Distribution:** Guaymas, Sonora to Cabo San Lucas, Golfo de California (McLean *in* Keen, 1971); Manabí Province, Ecuador (Shasky, 1984).

*Pilsbryspira nymphia* (Pilsbry & Lowe, 1932)  
(See Figures 6, 7)

Proceedings of the Academy of Natural Sciences, Philadelphia 84: 51, pl. 10, fig. 11. Also figured: Keen #1756.

**Specimens collected:** 30 specimens, 10.5-18.7 mm, from Pta. San Felipe, Playa Alicia, 35 km (22 mi) S



12

13

Figures 12, 13. *Compsodrillia haliplexa* (Dall, 1919), 24.2 mm specimen, Campo Uno, Pta. San Felipe, intertidal, minus 1.2 m tide, 16 January 1968 (12) apertural view (13) view of protoconch.

of San Felipe, Puertecitos, and Bahía San Luis Gonzaga.

1 specimen, 5.5 mm, Campo Uno, San Felipe, November 1971.

**Remarks:** Gemmell's notes state, "*C. bifurca* more common" [than *P. nymphia*].

**Distribution:** Head of the Gulf to Guaymas and Cabo San Lucas (McLean *in* Keen, 1971); Bahía Willard and San Luis Gonzaga (DuShane & Sphon, 1968); Guaymas (DuShane & Poorman, 1967); Puertecitos (DuShane, 1962); off Bahía San Carlos, Sonora (Poorman & Poorman, 1988).

Subfamily CLATHURELLINAE

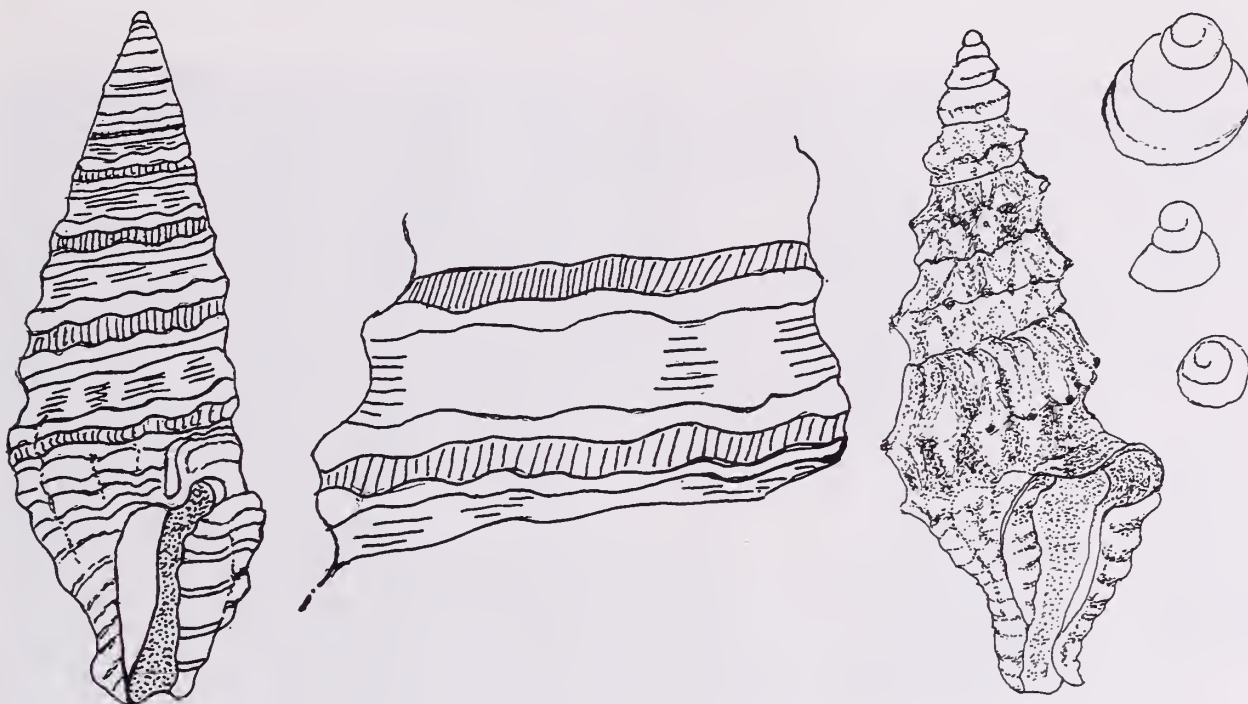
Genus *Nannodiella* Dall, 1919

*Nannodiella nana* (Dall, 1919)

(Figures 16, 17)

Proceedings of the United States National Museum 56(2288): 59-60, pl. 20, fig. 7. Also figured: Keen #1778 (holotype).





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Figures 14-17. (14, 15) *Pilsbryspira bacchia* (Dall, 1919), 6.0 mm specimen, Pta. San Felipe, living around and under stones, 1967 (14) apertural view (15) detail of spire. (16, 17). *Nannodiella nana* (Dall, 1919), 4.9 mm specimen, dredged by fishing boat *Chamizal II*, W of Isla Salvatierra, Bahía San Luis Gonzaga, in fine grunge in 26 m, 8-9 July 1969 (16) apertural view (17) three protoconch views, shown from above.

**Specimen collected:** 1 specimen, 4.9 mm, dredged by fishing boat *Chamizal II*, [station 5] (29°57'48"N, 114°28'00"W), W of Isla Salvatierra, Bahía San Luis Gonzaga, in fine grunge taken on broken shell bottom, in 26 m (14 fm), 8-9 July 1969.

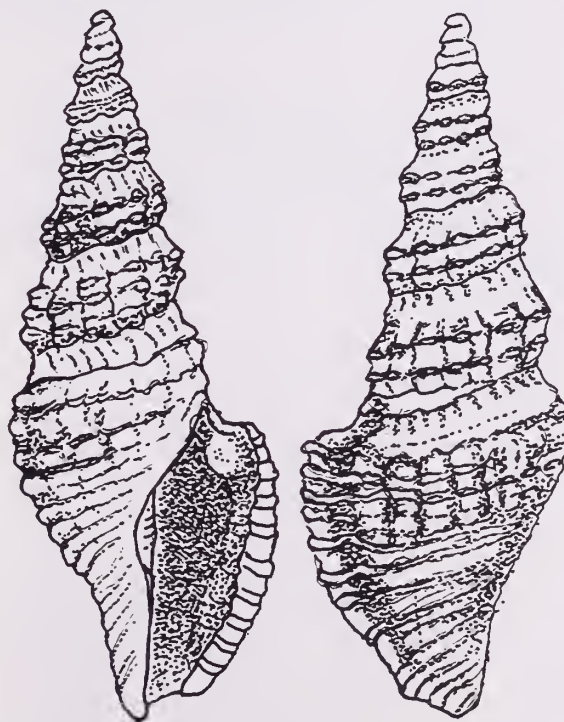
**Distribution:** Bahía San Luis Gonzaga, Golfo de California to Isla Gorgona, Colombia (McLean *in* Keen, 1971); Manabí Province, Ecuador (Shasky, 1984).

Genus *Glyphostoma* Gabb, 1872  
*Glyphostoma neglecta* (Hinds, 1843)  
 (Figures 18-19)

Proceedings of the Zoological Society, London [for 1843]: 45. Figured: Keen #1781 (holotype of *Lioglyphostoma armstrongi*).

**Synonyms:** *Defrancia intercalaris* Carpenter, 1856; *Clathurella aurea* Carpenter, 1857; *Glyphostoma adria* and *G. adana* Dall, 1919; *Lioglyphostoma armstrongi* Hertlein & Strong, 1951; *Glyphostoma myrakeenae* Olsson, 1964.

**Specimens collected:** 3 specimens, 13.8-15.1 mm, Playa Alicia, 35 km (22 mi) S of San Felipe,



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Figures 18, 19. *Glyphostoma neglecta* (Hinds, 1843), 15.0 mm, Playa Alicia, 32 km S of San Felipe, living, on minus tide, May 1970 (18) apertural view (19) dorsal view.

collected live on minus tide, May 1970.

**Distribution:** Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean *in* Keen, 1971); off Bahía San Carlos, Sonora (Poorman & Poorman, 1988).

Subfamily MANGELIINAE

Genus *Kurtziella* Dall, 1918

*Kurtziella antiochroa* (Pilsbry & Lowe, 1932)

(Figures 20-26)

Proceedings of the Academy of Natural Sciences of Philadelphia 84: 56, pl. 3, fig. 8. Also figured: Keen #1788 (holotype).

Possible synonym: *Mangelia cymatias* Pilsbry & Lowe, 1932.

**Specimens collected:** 2 specimens, 2.0 & 3.0 mm, [station D] (31° 12' 12" N to 31° 12' N and 114° 17' 36" W to 114° 31' 30" W), dredged by fishing boat *Chamizal I*, 5 -16 km (3-10 mi) from Consag Rock, in 20-38 m (11-21 fm) on sand and clay, in seastar stomachs, 29 June 1968.

74 specimens, 4.0-9.8 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, at low tide, intertidal, live-collected March 1976.

**Remarks:** In Gemmell, Hertz & Myers (1980: 46), we reported on two juvenile specimens from seastar stomachs and their resemblance to the synonym *K. cymatias*, concluding that they were *K. antiochroa*. Since that time, we have examined 74 additional specimens from juvenile to adult (4.0 to 9.8 mm) collected intertidally by Gemmell and a lot of 14 specimens collected by H. N. Lowe as *cymatias* from Puerto Peñasco in 18 m (10 fm) (SDNHM 22335).

We compared these specimens with photographs of the holotypes of *K. antiochroa* and *K. cymatias* (Figures 20, 21) as well as paratypes of both nominal species in the SDNHM collection (SDNHM 51196 [*antiochroa*] and 50998 [*cymatias*]) which appear to be separate species (Figures 22, 23).

Some of the Gemmell specimens have a broader shell (by 0.5 to 1.0 mm, a periphery with a stronger peripheral spiral cord with pointed tubercles at the angle of the axial ribs and a more elongate-appearing aperture. These features are pronounced in *K. cymatias* (Figures 21, 23). The holotype and paratype of *K. antiochroa* appear to have a more slender shell with a smaller aperture and more prominent chocolate colored bands below the periphery.



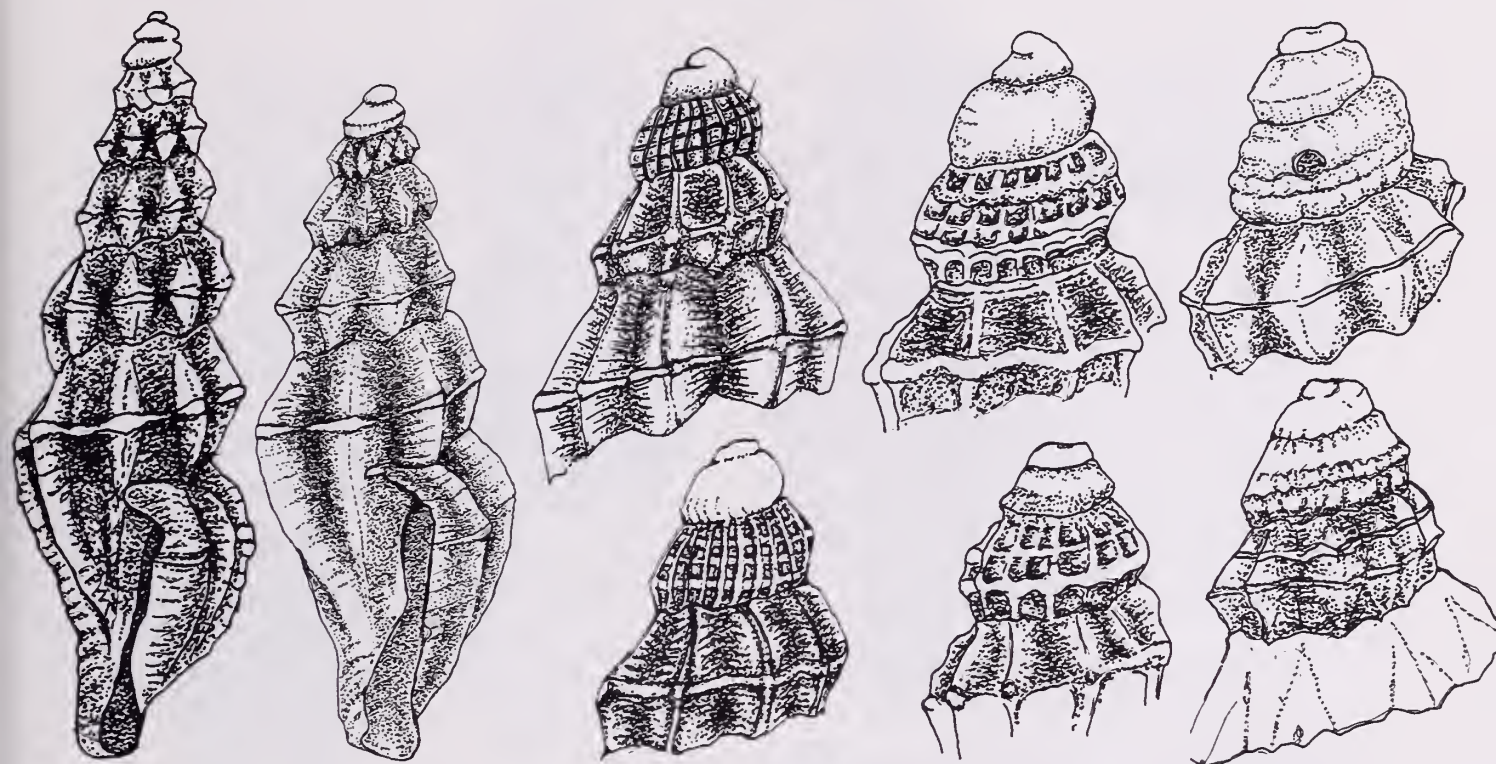
Figures 20, 21. (20) *Kurtziella antiochroa* (Pilsbry & Lowe, 1932) holotype, (ANSP 155190), 9.0 mm. Photo: V. O. Maes. (21) *K. cymatias*, holotype, (ANSP 155191), 6.0 mm. Photo: V. O. Maes.

We further examined the protoconchs of paratypes of the two nominal species and the Gemmell specimens and found differences. All had 2¼-2½ whorls. In *K. antiochroa* the two whorls are smooth, broadly rounded and brown, sculpture beginning just beyond the second whorl. In *K. cymatias* the protoconch is more conical, cream colored, the first whorl is smooth, the second smooth but for the beginning of a central spiral keel which develops into the mature sculpture by 2½ whorls (Figures 24-26)). The protoconch in the Gemmell specimens is like that of *K. antiochroa*.

The differences in the protoconch in the two species and the sculptural variation creates a question as to whether or not *K. cymatias* should be considered a synonym of *K. antiochroa*. Anatomical work would be necessary to resolve this question. Based on the protoconch, the Gemmell specimens are *K. antiochroa*. **Distribution:** Head of the Gulf to La Libertad, Ecuador (McLean *in* Keen, 1971).

*Kurtziella powelli* Shasky, 1971





22 23 24 25 26  
 Figures 22-26. (22) *K. antiochroa*, paratype (SDNHM 51196) (23) *K. cymatias*, paratype (SDNHM 50998) (24) *K. antiochroa*, 7.5 mm, detail of spire of Gemmell specimen, 2 views (25) *K. antiochroa*, 8.5 mm detail of spire of paratype (SDNHM 51196), 2 views (26) *K. cymatias*, 5.2 mm, detail of spire of paratype (SDNHM 50998), 2 views.

The Veliger 14(1): 70-71, fig. 7. Also figured: Keen #1790 (holotype).

**Specimens collected:** 13 specimens, 2.8 - 5.6 mm, dredged by fishing boat *Chamizal I* [station D] (31°12'12"N to 31°12'N and 114°17'36"W to 114°31'30"W), in 20-38 m (11-21 fm), 5-16 km (3-10 mi) S of Consag Rock, on sand and clay, in seastar stomachs, 29 June 1968.

2 specimens, 4.1 & 4.7 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, in drift, March 1969.

**Distribution:** Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean in Keen, 1971).

*Kurtziella cyrene* (Dall, 1919)

Proceedings of the United States National Museum 56(2288): 62-63, pl. 21, fig. 5. Also figured: Keen #1793 (holotype).

**Specimens collected:** 3 specimens, 2.5-3.1 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, in grunge.

**Remarks:** From Gemmell's notes, "One specimen

trawled by shrimp boat in 60-80 ft (18-24 m), 11 November 1971, from seastar stomachs now in B. Draper Collection" (Gemmell, Hertz & Myers, 1980: 46).

**Distribution:** Head of the Gulf to Bahía San Francisco, Ecuador (McLean in Keen, 1971); off Bahía San Carlos, Guaymas, Sonora, México (Poorman & Poorman, 1988).

*Tenaturris* Woodring, 1928

*Tenaturris merita* (Hinds, 1843)

Proceedings of the Zoological Society, London [for 1843]: 42. Figured: Keen #1798.

**Synonyms:** *Cithara fusconotata* Carpenter, 1864; *Cytharella nereis* Pilsbry & Lowe, 1932.

**Specimens collected:** 11 specimens, 7.1-11.2 mm, Campo Uno, Bahía San Felipe, live on and under mossy rocks, 18 February 1968.

1 specimen, 7.5 mm, Bahía San Luis Gonzaga.

**Distribution:** Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean in Keen, 1971).

Genus *Kurtzia* Bartsch, 1944  
*Kurtzia arteaga* (Dall & Bartsch, 1910)

Canada Department of Mines, Geological Survey Branch, Memoir no. 14-N: 11, pl. 2, fig. 4. Also figured: Keen #1810.

**Synonyms:** *Mangelia arteaga* var. *roperi* Dall, 1919; *Kurtzia gordonii* Bartsch, 1944.

**Specimens collected:** 42 specimens, 2.0-5.0 mm, off Pta. Estrella, San Felipe, dredge trip on *Chamizal I* fishing boat, from seastar stomachs, 19 June 1968. 3 specimens, 2.0-6.4 mm, San Felipe, in grunge.

**Distribution:** Vancouver Island, British Columbia, throughout the Gulf and S to the Golfo de Tehuantepec (McLean in Keen, 1971); at Consag Rock [as *Mangelia roperi*] (DuShane & Brennan, 1969); from Guaymas, Sonora [as *M. roperi*] (DuShane & Poorman, 1967).

Genus *Agathotoma* Cossmann, 1899  
*Agathotoma alcippe* (Dall, 1918)

Proceedings of the United States National Museum 54(2238): 333. Figured: Keen #1816 (holotype of *Cytharella euryclea*).

**Synonyms:** *Pleurotoma parilis* E. A. Smith, 1888, not Edwards, 1860; *Cytharella euryclea* and *C. pyrrhula*, both of Dall, 1919.

**Specimens collected:** 26 specimens, 4.8 - 6.3 mm, Campo Uno, San Felipe, live under and on sides of small rocks at minus 1.5 m (-5 ft) tide, February 1968.

4 specimens, 6.1-7.0 mm, San Felipe.

**Remarks:** Gemmell's notes state also "Playa Alicia grunge."

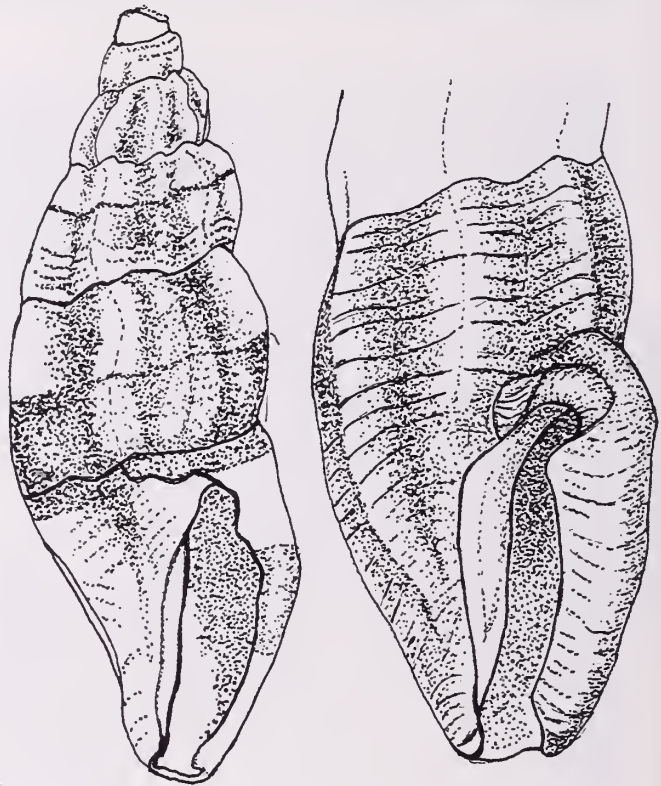
**Distribution:** Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean in Keen, 1971).

\**Agathotoma neglecta* (C. B. Adams, 1852)  
 (Figures 27, 28)

Catalogue of Shells Collected at Panama: 149, R. Craighead, N.Y. Figured: Turner, 1956, pl. 8, fig. 4; Keen #1819 (holotype).

**Synonyms:** *Defrancia despecta* H. & A. Adams, 1853, unnecessary new name; *Cytharella phryne* Dall, 1919.

**Specimen collected:** 1 specimen, 3.4 mm, Bahía San Luis Gonzaga, dredged.



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Figures 27, 28. *Agathotoma neglecta* (C. B. Adams, 1852), 3.4 mm specimen, dredged, Bahía San Luis Gonzaga (27) apertural view of specimen with outer lip broken (28) detail showing outer lip of 4.7 mm specimen, C. Skoglund Collection.

**Remarks:** This is the first report of the species in the northern Gulf.

**Distribution:** Islas Tres Marías, México, to Panamá (McLean in Keen, 1971); Bahía San Carlos, Sonora (Poorman & Poorman, 1988).

\**Agathotoma stellata* (Mörch, 1860)  
 (Figures 29, 30)

Beitrage zur Molluskenfauna Central Amerika's. Malakozoological Blätter for 1860: 103. Figured: Keen #1821 (holotype of *Cytharella hippolita*).

**Synonyms:** *Cytharella hippolita* Dall, 1919; *C. taeniornata* Pilsbry & Lowe, 1932.

**Specimens collected:** 2 specimens, 3.6 & 4.5 mm, San Felipe, in grunge.

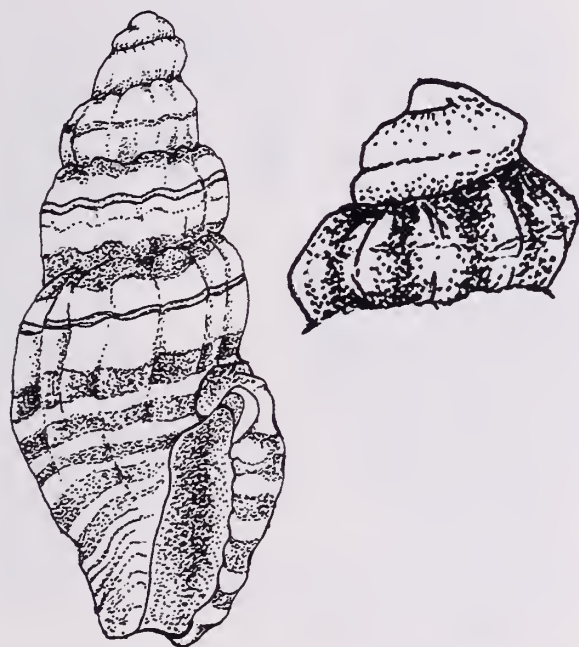
6 spec., 3.1-4.7 mm, Radar Beach, on hydroid.

**Remarks:** This is the first report of the species in the San Felipe area. The specimens were identified by Dr. J. H. McLean.

**Distribution:** Pta. San Hipolito, Baja California,



through the Gulf and S to Santa Elena Peninsula, Ecuador. "Mörch's specimen probably [sic] came from Costa Rica or Nicaragua" (McLean in Keen, 1971).



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Figures 29, 30. *Agathotoma stellata* (Mörch, 1860), 4.7 mm specimen from Radar Beach, San Felipe, on hydroid (29) apertural view (30) detail of protoconch.

\**Agathotoma* (*Vitricythara*) *klasmidia* Shasky, 1971.  
(Figures 31, 32)

The Veliger 14(1): 71, 72, fig. 8. Also figured: Keen #1822.

**Specimens collected:** 3 specimens, 5.2-6.2 mm, N of Ensenada Blanca, San Felipe, 2 April 1973.

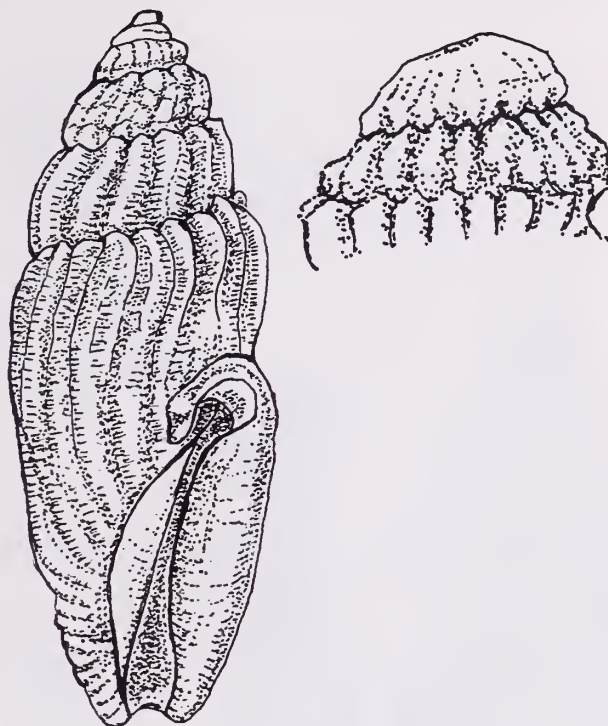
1 specimen, 8.5 mm, Bahía San Luis Gonzaga.

**Remarks:** This is the first report of the species from the San Felipe area. Identification confirmed by C. Skoglund.

**Distribution:** Puertecitos, Baja California, to Bahía de Panamá (McLean in Keen, 1971); Manabí Province, Ecuador (Shasky, 1984).

Genus *Pyrgocythara* Woodring, 1928

*Pyrgocythara danae* (Dall, 1919)  
(Figures 33-35)



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Figures 31, 32. *Agathotoma klasmidia* Shasky, 1971. 8.5 mm, San Luis Gonzaga (31) apertural view (32) detail of protoconch.

Proceedings of the United States National Museum 56(2288): 63, pl. 21, fig. 6. Also figured: Keen #1825 (holotype).

**Possible synonym:** *Crockerella pedersenii* Hertlein & Strong, 1951.

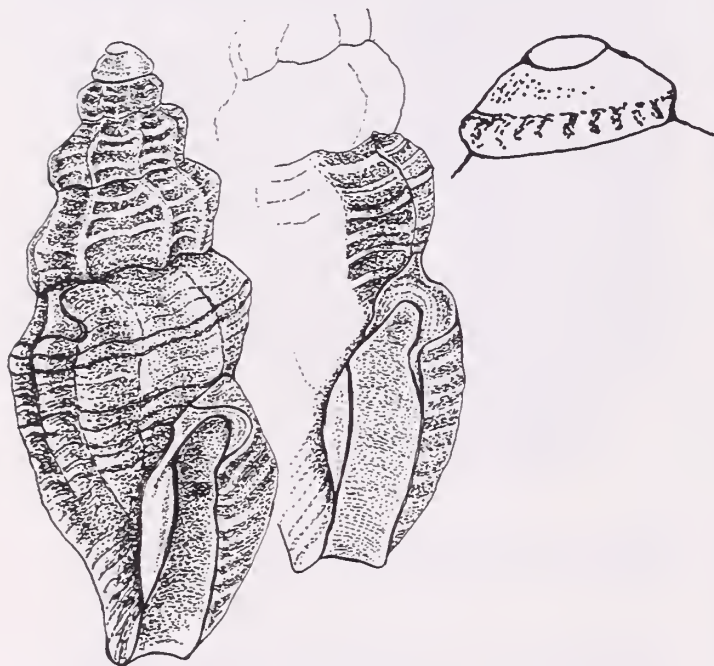
**Specimens collected:** 3 specimens, 4.4-4.7 mm, Bahía San Felipe.

**Remarks:** As can be seen in Figures 33, 34, some of the Gemmell specimens more closely resemble the illustration of the synonym *Crockerella pedersenii* in Hertlein & Strong (1951: 78, 79, pl. 1, fig. 5). In Hertlein & Strong's, description of *C. pedersenii*, they mentioned "a slight swelling at the lower edge of the anal sulcus." This is apparent on the Gemmell specimens but is not seen or mentioned for *P. danae*.

McLean in Keen (1971) illustrated *P. danae* as the holotype. but the photo appears different than the illustration of *P. danae* in Dall (1919, p. 63, pl. 21, fig. 6). Both have the same holotype number, but Dall's measurement of 4.5 mm differs from the 4.8 mm reported in Keen. Dall's figure seems to have an immature lip which he stated is smooth within. The figure in Keen appears to have a mature lip. If there are separate species, the Gemmell specimens would

be *P. pedersenii*.

**Distribution:** Head of the Gulf to Guaymas, Sonora, México and Bahía Agua Verde, Baja California (McLean in Keen, 1971); as *Crockerella pedersenii* at Guaymas (DuShane & Poorman, 1967: 435).



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Figures 33-35. *Pyrgocythara danae* (Dall, 1919), 6.0 mm specimen, Bahía San Felipe, from seastar stomach, trawled in 9.4 m, June 1970 (33), apertural view (34) detail of aperture (35) detail of protoconch.

*Pyrgocythara emersoni* Shasky, 1971  
(Figures 36, 37)

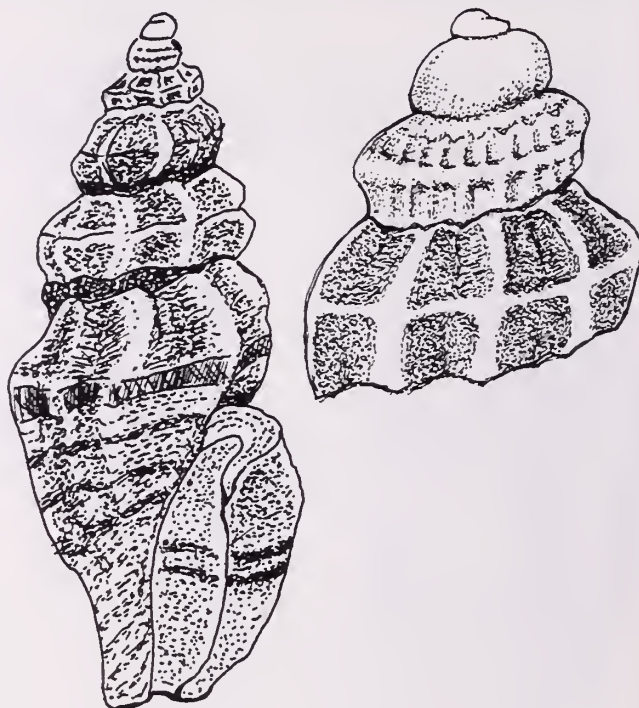
The Veliger 14(1): 72, fig.10. Also figured: Keen #1826 (holotype).

**Specimens collected:** 2 specimens,  $\pm 7.0$  mm, Radar Beach near Pta Estrella at the S end of Bahía San Felipe [Station E], intertidal in -1.5 m (-5.0 ft.) low tide, collected from seastar stomachs, 1 June 1969 (Gemmell, Hertz & Myers, 1980: 47).

5 specimens, 5.2-7.1 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, in intertidal grunge.

**Distribution:** Head of the Gulf to Guaymas and Puertecitos (McLean in Keen, 1971).

\**Pyrgocythara scammoni* (Dall, 1919)  
(Figures 38-40)



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Figures 36, 37. *Pyrgocythara emersoni* Shasky, 1971, 6.5 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, in grunge (37) apertural view (38) detail of protoconch

Proceedings of the United States National Museum 56(2288): 57, pl. 18, fig. 1. Also figured: Keen #1832 (holotype).

**Specimens collected:** 18 specimens, 4.5-7.0 mm, Playa Cadena, 5 km (3 mi) S of San Felipe, in intertidal grunge.

11 specimens, 3.6-6.7 mm, Bahía San Felipe, intertidal.

4 specimens, 2.4-4.1 mm, Bahía San Felipe from seastar stomachs, trawled in 9.4 m, June 1970.

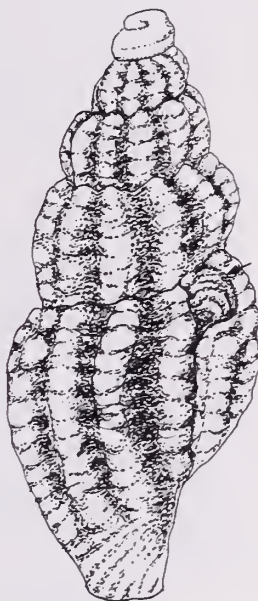
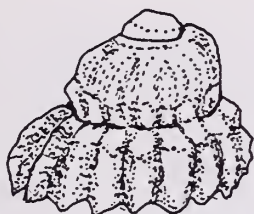
1 specimen, 5.4 mm, from seastar stomach, San Felipe, June 1969

**Remarks:** The one 5.4 mm specimen from a seastar stomach was a problem to identify. Finally, the specimen was sent to Dr. J. H. McLean who identified it as a freak specimens of *P. scammoni*. He noted the "regrowth after the final lip with anal notch apparent on the dorsum of the shell" (Figure 40).

This is the first report of the species in the San Felipe area.

**Distribution:** Bahía Magdalena and the N end of the Gulf as far as Isla Tiburón (McLean in Keen, 1971); Bahía la Cholla, Sonora (Draper, 1975); Bahía San Luis Gonzaga (DuShane & Sphon, 1968); Guaymas, Sonora (Poorman & Poorman, 1988).





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Figures 38-40. *Pyrgocythara scammoni* (Dall, 1919). 5.7 mm, Bahía San Felipe, intertidal (38) apertural view (39) detail of protoconch (40) "freak" specimen from seastar stomach showing dorsal sinus.

Subfamily Daphnellinae  
Genus *Daphnella* Hinds, 1844

*Daphnella bartschi* Dall, 1919

Proceedings of the United States National Museum 56(2288): 74, pl. 19, figs. 4, 5. Also figured: Keen #1837 (holotype).

Specimens collected: 2 specimens, 15.1 & 15.2 mm, Bahía San Luis Gonzaga, beach specimens, April 1967.

Distribution: San Luis Gonzaga to Barra de Navidad, Jalisco, México, to Islas Galápagos (McLean in Keen, 1971).

Genus *Philbertia* Monterosato, 1884

*Philbertia doris* Dall, 1919

Proceedings of the United States National Museum 56(2288): 55, pl. 18, fig. 4. Also figured: Keen #1843

(holotype of *Clathurella crebriforma*).

Synonym: *Clathurella crebriforma* Shasky & Campbell, 1964.

Specimen collected: 1 specimen, 5.0 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, in intertidal grunge.

Distribution: Head of the Gulf to Bahía de Panamá (McLean in Keen, 1971); Manabí Province, Ecuador (Shasky, 1984).

Genus *Microdaphne* McLean, 1971

\**Microdaphne trichodes* (Dall, 1919)  
(Figures 41, 42)

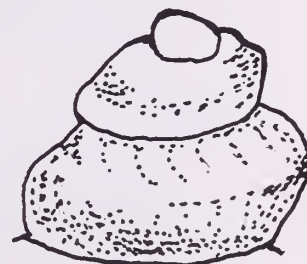
Proceedings of the United States National Museum 56(2288): 62, pl. 19, fig. 3. Also figured: Keen #1848.

Synonym: *Pleurotoma hirsutum* De Folin, 1867, not Bellardi, 1848.

Specimen collected: 1 specimen, 3.7 mm, San Felipe, in grunge.

Remarks: This is the first record of the species from San Felipe.

Distribution: Puertecitos, head of the Gulf, to Isla Gorgona, Colombia and the Islas Galápagos (McLean in Keen, 1971); Isla Cedros, off the Pacific coast of Baja California, to Perú (Emerson, 1991).



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Figures 41, 42 *Microdaphne trichodes* (Dall, 1919), 3.7 mm, San Felipe, in grunge (41) apertural view (42) detail of protoconch.

LITERATURE CITED

- BARTSCH, PAUL  
1944. Some notes upon West American turrid mollusks. *Proceedings of the Biological Society of Washington* 57: 25-30.
- CARPENTER, PHILIP P.  
1857. Catalogue of the collection of Mazatlan shells in the British Museum... Paleontological Research Institution, Ithaca, NY, xii + 552 pp. (reprint ed., 1967)
- COSEL, RUDO VON  
1984. Moluscos marinos de la Isla de Gorgona (costa del Pacifico Colombiano). *Anales del Instituto de Investigaciones Marinas de Punta de Betún* 14: 175-257, figs. 1-42.
- DALL, WILLIAM H.  
1919. Descriptions of new species of mollusks of the family Turritidae from the west coast of America and adjacent regions. *Proceedings of the United States National Museum* 56(2288): 1-86, pls. 1-24.
- DRAPER, BERTRAM C.  
1975. Checklist of shells collected at Cholla Bay, Sonora, Mexico. *The Festivus* 6(11): 67.
- DUSHANE, HELEN  
1962. A checklist of mollusks for Puertecitos, Baja California, Mexico. *The Veliger* 5(1): 39-50.
- DUSHANE, HELEN & ELLEN BRENNAN  
1969. A preliminary survey of mollusks for Consag Rock and adjacent areas, Gulf of California, Mexico. *The Veliger* 11(4): 351-361, 1 map.
- DUSHANE, HELEN & ROY POORMAN  
1967. A checklist of mollusks for Guaymas, Sonora, Mexico. *The Veliger* 9(4): 413-441.
- DUSHANE, HELEN & GALE G. SPHON  
1968. A checklist of intertidal mollusks for Bahía Willard and the southwestern portion of Bahía San Luis Gonzaga, state of Baja California, Mexico. *The Veliger* 10(3): 233-246, 1 map.
- EMERSON, WILLIAM K.  
1991. First records for *Cymatium mundum* (Gould) in the eastern Pacific Ocean, with comments on the zoogeography of the tropical trans-Pacific tonnacean and non-tonnacean prosobranch gastropods with Indo-Pacific faunal affinities in west American waters. *The Nautilus* 105(2): 62-80, figs. 1-24.
- GEMMELL, JOYCE, CAROLE M. HERTZ & BARBARA W. MYERS  
1980. Seastar predation on mollusks in the San Felipe Bay area, Baja California, Mexico. *The Festivus* 12(3): 24-55, figs. 1-51.
- HERTLEIN, LEO G. & A. M. STRONG  
1951. Eastern Pacific expeditions of the New York Zoological Society XLIII. Mollusks from the west coast of Mexico and Central America. Part X. *Zoologica*, N.Y. 36: 67-120, pls. 1-11.
- HERTZ, CAROLE M. & JULES HERTZ  
1975. Eggs of *Hormospira maculosa*. *The Festivus* 6(6): 36, figs. 1-3.
- McLEAN, JAMES H. in KEEN, A. MYRA  
1971. Family Turridae, pp. 686-766 in *Sea Shells of Tropical West America*. Marine mollusks from Baja California to Peru. 2<sup>nd</sup> edition. Stanford University Press. 1-xiv + 1064 pp. illustrated.
- OLSSON, AXEL A.  
1971. Mollusks from the Gulf of Panama collected by R/V John Elliott Pillsbury, 1967. *Bulletin of Marine Science* 21(1): 35-92, 103 figs.
- PILSBRY, HENRY A. & H. N. LOWE  
1932. West Mexican and Central American Mollusks collected by H. N. Lowe, 1929-31. *Proceedings of the Academy of Natural Sciences of Philadelphia* 84: 33-144, pls. 1-17, 7 text figs., 2 photos.
- POORMAN, FORREST L. & LEROY H. POORMAN  
1988. A report of the molluscan species in the San Carlos rectangle, Sonora, Mexico, collected by Forrest L. and Leroy H. Poorman from December 1953 to December 1983. *The Festivus* 20(6): 47-63, 1 map.
- POWELL, A. W. B.  
1966. The molluscan families Speightiidae and Turridae. *Bulletin of the Auckland Institute and Museum* 5: 1-184, pls. 1-23, 179 text figs.
- REGUERO, MARTHA & ANTONIO GARCÍA-CUBAS  
1987. Sistemática y ecología de moluscos bentónicos de Nayarit. *Memorias, Sociedad Mexicana Malacología* 3: 31-47, figs. 1-2.
- SHASKY, DONALD R.  
1984. A preliminary checklist of marine mollusks from Manabí Province, Ecuador. *The Western Society of Malacologists Annual Report* [for 1983] 16: 25-32.
- SKOGLUND, CAROL  
1991. Panamic range extensions for *Drillia* (Gastropoda: Turridae). *The Festivus* 23(6): 47.
1992. Additions to the Panamic Province Gastropod (Mollusca) Literature 1971 to 1992. *The Festivus*, Vol. 24 (Supplement): 169 pp.
- TURNER, RUTH D.  
1956. The eastern Pacific marine mollusks described by C. B. Adams. *Occasional Papers on Mollusks, Museum of Comparative Zoology, Harvard University* 2(20): 21-135, pls. 1-21.





# THE FESTIVUS

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Meeting date: third Thursday, 7:30 PM,  
Room 104, Casa Del Prado, Balboa Park, San Diego

## PROGRAM

### Collecting, Diving and Exploring in the Philippines

Club members Kay Klaus and Mike and Karen Mason will give a talk on their recent vacation in the

Philippine Islands. They will show slides of some of the areas in which they dived and visited.

Meeting date: July 20, 2000  
Shells of the month: Philippine shells

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## CLUB NEWS

### Minutes of the San Diego Shell Club Meeting - June 15, 2000

President Mike Mason welcomed everyone and called the meeting to order at 7:45 p.m. The minutes of the May meeting were approved as written in *The Festivus*, with a motion by Billee Gerrodette and seconded by Carole Hertz.

Linda Hutsell has taken over as our new Librarian. Editor Carole Hertz continues to request articles. Several guests were recognized and welcomed.

The date for the September Party is the 16<sup>th</sup>, (see col. 2). Mike also announced that Tom Rice's publication list is available and anyone interested in being included in Tom's *Who's Who in Malacology* should take a form and send it to Tom Rice.

Vice President Kim Hutsell introduced Dr. Henry (Hank) Chaney of the Santa Barbara Museum of Natural History, the speaker for the evening. Hank began by introducing the release of the long-awaited book, *Bivalve Seashells of Western North America* by Coan, Valentich Scott and Bernard. Copies were available for sale at the meeting. In addition to covering the bivalve mollusks from Alaska to southern California, the book contains an excellent bibliography.

Hank then talked about his recent trip to the Marquesas Islands, a remote set of islands near French Polynesia. There are four main islands. The group visited two of them (Nuku Hiva and Ua Pou). He said that the islands had a rich culture and were very populous until Cook's arrival. From then on, there was much more disease. Today only about 3,500 people occupy the islands. He and the others in the group stayed at an embayment at Taiohea. It was windy and there were sheer cliffs with little beach area. Although there was not much opportunity for intertidal collecting, diving was productive. The area is quite rich especially because of its forms of species that are isolated within these islands. For example, a subspecies of *Lambis crocata* there has very long spines. Often when a species was found, many of them were found together. There was a lack of bivalves and not much coral, though there were many sea urchins. His favorite shell from the trip was a beautiful *Chicoreus thomasi*.

Hank's program, with his fine slides, was not only very entertaining but gave a great deal of information about the islands and their history. It was a program

greatly enjoyed by the large group in attendance.

The winner of the shell drawing was Margaret Mulliner. Thanks to the Masons and the Schneiders for the delicious refreshments. The meeting was adjourned at 8:40 p.m. for socializing and further browsing of reprints, books and plastic boxes on sale.

Silvana Vollero

### New Member

Pras, Stephane, 15 Rue Marbeau, 75116 Paris, France

### The September Party

The September party will be held on Saturday evening September 16<sup>th</sup>, again at the home of Terry and Marty Arnold. It will be another fantastic "Heavy Grazing" affair. Those who attend are asked to bring delicious munchies to fill the cravings of the always hungry guests.

Details and map in the August issue.

### A New Club Librarian

With this issue, our friend and member, Kay Klaus, and her husband Del will be relocated to Texas. We thank Kay for her considerable help as interim librarian and appreciate Linda Hutsell's willingness to take over as Club librarian.

We will all miss Kay and hope that she will keep her promise to visit us often.

### Club Historian and Host Needed

With the departure of member Kay Klaus, the Club needs a historian. It is not a difficult position — keeping the historian's book up-to-date with photos and items of interest pertaining to the Club. The historian's books are kept in the new permanent library cabinets and available for viewing by members at meetings.

The Club has also been in need of a Host since the beginning of last year. This is not a difficult job either. If you attend most meetings and would be willing to set up the refreshment table each time, please contact Mike Mason and offer to take over the position [E-mail: <mmason2706@aol.com> or phone: (619-482-1098)].



NEW DISTRIBUTIONAL RECORDS OF OPISTHOBRANCHS  
FROM THE PUNTA EUGENIA REGION OF THE BAJA CALIFORNIA  
PENINSULA: A REPORT BASED ON 1997-1998  
CONABIO-SPONSORED EXPEDITIONS

HANS BERTSCH<sup>1</sup>, ORSO ANGULO CAMPILLO, and JOSÉ LUIS ARREOLA

Universidad Autónoma de Baja California Sur,  
Aptdo. Postal 19-B, La Paz, Baja California Sur, México 23080

**ABSTRACT** We report range extensions of nine opisthobranch species (*Aplysiopsis oliviae*, *Thordisa rubescens*, *Peltodoris nayarita*, *Platydoris macfarlandi*, *Crosslandia daedali*, *Flabellina vansyoci*, *Catriona rickettsi*, *Cuthona albocrusta*, and *Cuthona lagunae*) to the central Pacific coast of the Baja California Peninsula, México.

## INTRODUCTION

Almost 30 years ago, the southern distributional limits of many Californian opisthobranchs ended at La Jolla or San Diego. This was an artifact of collecting activities and politics, not biology. During the past 15 plus years, the opisthobranch fauna of the Pacific coast of the Baja California Peninsula has become much better known (e.g., Bertsch, 1990, 1991; Bertsch & Gosliner, 1986; and Bertsch & Willan, 1986). There are two distinct faunal provinces along this coastline. The northeastern Pacific coast of Baja California is clearly part of the warm temperate faunal province of southern California, which ends approximately at Punta Eugenia. The tropical Panamic (=eastern Pacific) Faunal Province begins at Bahía Magdalena and continues south to the Islas Galápagos and Perú (Keen, 1971).

However, the opisthobranch fauna of the central Pacific coastline of the Baja California Peninsula (between Punta Eugenia and Bahía Magdalena) remains one of the lesser-studied in the northeastern Pacific. During the mid-1980s, joint expeditions of the California Academy of Sciences (San Francisco, California) and the Universidad Autónoma de Baja California (Ciencias Marinas, Ensenada, Baja California) yielded significant new information for this

region (see Bertsch, 1985; Gosliner, Ghiselin & Bertsch, 1985; Gosliner, 1994; and data incorporated in Behrens, 1991).

The area between Punta Eugenia and Bahía Magdalena represents a zone of provincial-level faunal overlap (Bertsch, 1993). Although the fauna is still greatly unknown, one can predict a mixture of temperate southern California and tropical Golfo de California species. Almost no data exist on seasonal variation for this region. In this ecotonal region southern range extensions of Californian temperate species and northern range extensions of tropical Panamic Province species are expected to be encountered.

Our grant from the Mexican federal biodiversity agency (Comisión Nacional para el Conocimiento y Uso de la Biodiversidad = CONABIO) involved two areas of research directly impacting this area:

a) First, a field study of the intertidal and subtidal biodiversity of opisthobranchs in Mexican federally designated *Regiones Prioritarias* # 5 (Vizcaino-Cedros-El Barril, basically from Isla Cedros to Punta Eugenia, including Bahía Tortugas), and # 7 (Cabo San Lucas, Bahía de La Paz and Loreto). Results from region # 7

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<sup>1</sup>Mail correspondence to all authors to: 192 Imperial Beach Blvd. #A, Imperial Beach, CA 91932, USA.

are found in Angulo (2000, thesis, UABCS), and Bertsch & Valdés (in preparation). In this report we present significant new data and range extensions for opisthobranch mollusks from *Region Prioritaria* # 5.

b) The second aspect of our grant involved the "*repatriación de datos*," by which we were able to examine the collections of the three major natural history museums in California (California Academy of Sciences [CAS], Santa Barbara Museum of Natural History [SBMNH], and Los Angeles County Museum of Natural History [LACM]), and recorded the collecting data of all opisthobranch specimens from Pacific Mexican waters. This information has been incorporated into the Mexican National Biodiversity Data Base that will be available online through the auspices of CONABIO.

Our CONABIO-sponsored field and museum research expeditions yielded new distributional records of opisthobranchs. In Bertsch, Angulo & Arreola, 1999, we published reports and a discussion of new records of *Pleurobranchus areolatum* (Mörch, 1863), *Spurilla neapolitana* (Delle Chiaje, 1823), and *Aeolidiella indica* Bergh, 1888, from Baja California Sur (BCS).

In this article, we report range extensions of nine opisthobranch species (from the Golfo de California or the lower Baja California Peninsula, and from southern California) to the Punta Eugenia/Bahía Tortugas region of Baja California Sur. Our intertidal collecting site at Bahía Tortugas, is situated at 27° 41.6' N; 114° 53.3' W; Punta Eugenia is at approximately 27° 51' N; 115° 05' W.

Voucher specimens are in the collections of the Marine Biology Department of the UABCS, La Paz, BCS, México, with the exception of *Platydoris macfarlandi* which is in the collections of the LACM; color slides are in the collection of the senior author.

#### ORDER SACOGLOSSA FAMILY HERMAEIDAE

*Aphysiopsis oliviae* (MacFarland, 1966)

**Material Examined:** 1 specimen, 5 mm in length; El Morro, Isla Cedros (28° 01' N; 115° 11' W); intertidal, on *Sargassum*; 23 April 1998; leg. Orso Angulo Campillo (OAC) & José Luis Arreola (JLA).

**Description and Discussion:** The dark coloration and distinctive rhinophore shape are diagnostic features for this species.

Its previous known range had been from Saltspring

Island, British Columbia, Canada (Millen, 1980), to Monterey Bay, California (MacFarland, 1966). Our specimen represents a southern range extension of over 1150 km, and the first report from off the Pacific coast of the Baja California Peninsula, México.

#### ORDER NUDIBRANCHIA SUBORDER DORIDACEA FAMILY DISCODORIDIDAE

*Thordisa rubescens* Behrens & Henderson, 1981

**Material Examined:** 1 specimen, 6 mm total length; Las Gavilanes, Punta Eugenia, BCS (27° 51.22' N; 115° 04.38' W); subtidal, 5 m deep; 7 October 1998; leg. Hans Bertsch (HB) and OAC.

**Description and Discussion:** Distinctive external features of this species are the variously-sized dorsal papillae, and the brilliant red-orange body color mottled with gold flecks behind the rhinophores, along the midline of the dorsum, and around the branchial plumes.

Although this species may reach 90 mm in total length, our specimen measured only 6 mm.

Our specimen matched exactly the descriptions of *T. rubescens* from southern California (Palos Verdes and San Clemente Island), and represents a southern range extension of more than 550 km and its first report from Mexican waters.

*Peltdoris nayarita* Ortea and Llera, 1981

**Material Examined:** 1 specimen; 18 mm; about 1 km NE of Punta Eugenia, BCS; 6 m deep; 15 August 1998 (74° F water temperature); leg. HB and OAC.

**Description and Discussion:** The orange red body with brown splotches match the original description, as do also the tubercles covering the dorsum, and the obviously elevated pockets surrounding the rhinophores and gills. Dr. Ángel Valdés informs me that our specimen exactly matches specimens of this species which he has collected south of the type locality.

The original description of this species was based on only a single specimen collected from Isla Isabela, Nayarit, México. In addition to being only the second specimen ever reported, our organism represents a significant northward range extension of nearly 1300 km from the center of the Panamic Faunal Province, and its first reported occurrence in nearly 20 years. It should also be noted that our specimen from the Punta Eugenia region was collected during a period of warm water for this region.



## FAMILY PLATYDORIDIDAE

*Platydoris macfarlandi* Hanna, 1951

**Material Examined:** 2 specimens; 74 and 64 mm total preserved length; Bahía San Cristobal, BCS (27° 24' 28" N; 114° 39' 40" W); 30 m deep; April 1950; in the collections of LACM (1949-50).

**Description and Discussion:** This flat, disk-shaped dorid is distinctive for the minute villiform papillae which give it a velvety smooth appearance (Behrens, 1991). It has been reported only twice from the southern California bight region. Hanna (1951) described the species based on three preserved individuals which had been dredged from 157-201 m (86-110 fm) depth off Pismo Beach, California. Behrens & Henderson (1983) described two live specimens trawled from 55-113 m depth in the Redondo Canyon (33° 50' 20" N; 118° 25' 20" W), which had been on the yellow sponge *Subarites ficus* (Johnson, 1842). Now, nearly 50 years after the original description of the species, we report a southern range extension of over 700 km for this species, based on specimens deposited in the collections of the LACM a year before the species was named and its first record from the Pacific coast of BCS.

The "rarity" of this species may well be an artifact of collecting activity. Most nudibranch researchers study the intertidal and (only recently) scuba-accessible subtidal depths, not the deeper subtidal and continental shelf depths from which the specimens of *P. macfarlandi* have been reported. This is similar to known records of *Bathydoris aioca*, which had been reported only once from the Isla Guadalupe, Baja California, México, holotype by Marcus & Marcus (1962), before the deep water Oregon records published by Valdés & Bertsch (2000).

The patronymy and authorship of this species recall a most poignant moment in the history of west coast malacology. California Academy of Sciences paleontologist G Dallas Hanna, and original member of the Editorial Board of *The Veliger*, named this species in honor of Dr. Frank Mace MacFarland. Dr. Hanna published only this single nudibranch article in his entire professional life. He prefaced it with the following comments:

"A few minutes before Dr. F.M. MacFarland collapsed on February 21, 1951, he discussed with me the generic position of a rather remarkable species of nudibranch which had been collected a few weeks previously. He

unquestionably would have described this animal in his very thorough manner had fate permitted. As a poor substitute, I will endeavor to place it on record and it seems fitting that it be named for him."

The history of science and our understanding of the unknown is often made by such personal interactions.

SUBORDER DENDRONOTACEA  
FAMILY SCYLLAEIDAE

*Crosslandia daedali* Poorman & Mulliner, 1981

**Material Examined:** One specimen, 10 mm total length; Malarrimo, Punta Eugenia, BCS (27° 47.98' N; 114° 43' W); 2 m deep; 17 August 1998; leg. HB & OAC.

**Description and Discussion:** The body shape and coloration patterns are quite distinctive for *C. daedali*: the wide winglike lobes extend laterally along the middle half of each side; they have numerous fimbriating retractable branchial tufts irregularly placed on the inside surface of the lobes and the adjacent dorsal surface. The color is greenish brown-orange, with brilliant blue small round spots medially along the side of the body (Poorman & Mulliner, 1981: 96-97).

This species had previously been reported only from the Sonoran shores of the Golfo de California, slightly north of Guaymas: Tinajas, Bahía Baco-chimbampo, and Punta Cuevas, Bahía de San Carlos.

Our specimen of *C. daedali* from the Punta Eugenia region (on the outer Pacific coast of the BC Peninsula) represents the first record other than the type locality region, the first report of this species from outside the Golfo de California, and its first finding in almost 20 years since the original description. Intermediate localities need to be examined for additional records and to establish its biology and natural history.

SUBORDER AEOLIDACEA  
FAMILY FLABELLINIDAE

*Flabellina vansyoci* Gosliner, 1994

**Material Examined:** 3 specimens, 14, 15 and 18 mm in total length; reef by lighthouse at Campitos (Punta Eugenia region, BCS, 27° 49.42' N; 114° 51.07' W); 6 m deep; 3 October 1998; leg. HB & OAC.

**Description and Discussion:** This northward range extension of over 450 km is significant because our specimens are the first report of this species outside

the limits of the Panamic Province. Its only previous reports have been from Bahía Magdalena and south to Isla Ladrónes, Panamá (Gosliner, 1994). This record (and that of *C. daedali*) emphasizes the provincial-level ecotonal nature of the region between Bahía Magdalena and Punta Eugenia discussed in the Introduction of this paper.

This species has been illustrated with a color photograph as *Flabellina* sp. 2 (Species # 173, Behrens, 1991).

### FAMILY TERGIPEDIDAE

*Carriona rickettsi* Behrens, 1984

**Material Examined:** 2 specimens, 4 and 5 mm total length; Piedras Blancas, islands northeast of Punta Eugenia, BCS (approx. 27° 51.8' N; 115° 02' W); subtidal, 13 m deep; 18 August 1998; leg. HB & OAC.

**Description and Discussion:** This distinctively brilliantly colored eolid has previously been reported only from San Francisco Bay and La Jolla, California (Behrens, 1984). Our specimens are the first report from the Pacific BC coast of México, and represent a southward range extension of over 500 km.

*Cuthona albocrusta* (MacFarland, 1966)

**Material Examined:** 1 specimen, 4 mm total length; in front of the former PESCA station, Bahía Tortugas, BCS (approx. 27° 41.6' N; 114° 53.3' W); intertidal; 24 February 1998; leg. HB & OAC.

**Description and Discussion:** The white frosting markings on the body and cerata are specific diagnostic characters.

This species' previously known range is from the San Juan Islands, Washington, to Palos Verdes, California (Behrens, 1991). Our specimen represents a southward range extension of approximately 650 km, and the first report of this species from the Mexican waters of the Pacific coast of the BC Peninsula.

*Cuthona lagunae* (O'Donoghue, 1926)

**Material Examined:** 1 specimen, 5.5 mm total length; reef in front of former PESCA facility, Bahía Tortugas; intertidal; 25 December 1997; leg. HB & OAC.

**Description and Discussion:** The orange-red coloration on the rhinophores and on the tips of the cerata are distinctive. Overall body coloration is whitish, with black ceratal cores.

This species has been reported from Curry County,

Oregon, USA, to Islas San Benito, BC, México (Behrens, 1991). Although our specimen represents only a very small southeastward range extension, it is important in establishing a possible long-term presence of this species along the Pacific coast of the BC Peninsula.

### SUMMARY DISCUSSION AND PROPOSAL FOR RESEARCH PROJECTS

Publication of range extensions may sometimes appear problematic, trivial, or less than significant. However, this perhaps well-meaning perspective falters when natural history is considered. Our knowledge of marine invertebrate distributions is significantly limited. One only needs to look at field guides for mammals, birds or reptiles to see a distinct difference in the biological understanding of the natural history of different groups of organisms. If you or I see an unidentifiable bird or mammal, a simple perusal of distributional maps will usually allow us to properly identify it. By contrast, the complete or changing distributions of many opisthobranch species are unknown (as this paper demonstrates). Seasonal or yearly variation based on various climatic, substrate or other factors, are only partially understood. One cannot rely on known distributional maps.

We are in a marvelous period of discovery that will lead to significant information about the geographic and temporal variation of opisthobranch species. If we properly record variations in occurrences of species and improve our knowledge of the biodiversity of interrelated marine habitats, we will better understand the long-term selective and chance processes that impact evolutionary processes and how we can act to preserve them rather than push organisms to the verge of extinction.

Therefore I propose an ongoing research publication project concerning marine molluscan biodiversity. Scientific journals (such as *The Veliger*, *The Festivus*, *Journal of Molluscan Studies*, etc.), and electronic sites (such as Mike Miller's Opisthobranch Site, <[www.slugsite.tierranet.com](http://www.slugsite.tierranet.com)>, with its multiple online linkages), should publish more collecting data from various research expeditions. These data should not languish in individual record logs, but should be incorporated into accessible scientific databases.

With these data we can begin to understand the population dynamics of marine species that may have even a greater ecosystem role than some of the more



engaging species (i.e., those with the brown-eyed fuzzy factor) that conservation biologists need to present for public support of environmental protection programs. Since the earth is blue (the oceans cover over 70% of earth's surface) we need to pay greater attention to the slimy details of marine invertebrate diversity (Wilson, 1988; Reaka-Kudla, Wilson & Wilson, 1997).

### ACKNOWLEDGMENTS

We are grateful to CONABIO for the grant which allowed us to perform this research; the assistance of the staff at the fishing cooperatives in Bahía Tortugas: including Manuel Higuera Serrano of La Purísima, and Francisco Robles of Cooperativa Natividad; to Francisco Javier Zacatzi Ayala and his family and crew at the Restaurant/Hotel Vera Cruz; and for the great warmth and hospitality shown us by all the inhabitants of the area who asked more than once, "What are you looking for? ¿Babosas del mar?"

We also thank the curators and collection managers of the California natural history museums (CAS: Robert van Syoc; SBMNH: Henry Chaney and Paul Valentich Scott; LACM: Lindsay Groves) for their invaluable assistance, and Dr. Terrence M. Gosliner (CAS) for his valued comments on the manuscript.

As with any scientific expedition, we extend special thanks to our families and loved ones who remained behind while we endured the rigors of the field.

### LITERATURE CITED

- ANGULO CAMPILLO, ORSO.  
2000. Determinación de los moluscos opisthobranchios (Mollusca: Opisthobranchia) de Baja California Sur, México. Thesis, Universidad Autónoma de Baja California Sur, La Paz.
- BEHRENS, DAVID W.  
1984. Notes on the tergipedid nudibranchs of the northeastern Pacific, with a description of a new species. *The Veliger* 27 (1): 65-71.  
1991. Pacific coast nudibranchs, second edition. *Sea Challengers*, Monterey, 107 pp.
- BEHRENS, DAVID W., & R. HENDERSON.  
1981. Two new cryptobranch dorid nudibranchs from California. *The Veliger* 24 (2): 120-128.  
1983. Redescription of *Platydoris macfarlandi* Hanna, 1951, a rare deepwater dorid nudibranch. *The Veliger* 25 (4): 365-369.
- BERTSCH, HANS.  
1985. An international reconnaissance expedition: Marine zoogeography of Baja California Sur. *Environment Southwest* 508: 18-23.  
1990. Malacological explorations along the inner and outer coasts of Baja California. *Western Society of Malacologists, Annual Report* 22: 27.
1991. Biodiversity of the dorid nudibranch (Mollusca: Opisthobranchia) fauna of the Pacific coast of the three Californias: systematic and zoogeographic comments. In: Murray Dailey and Hans Bertsch (eds.), *Proceedings VIII International Symposium of Marine Biology*, Ensenada, Baja California, Mexico. Pp. 107-115.  
1993. Opisthobranchios (Mollusca) de la costa occidental de México. In: S.I. Salazar Vallejo y N.E. Gonzalez (eds.), *Biodiversidad Marina y Costera de México*. CONABIO y CIQRO, México. Pp. 253-270.
- BERTSCH, HANS, ORSO ANGULO CAMPILLO, & JOSÉ LUIS ARREOLA.  
1999. Opisthobranchs of Bahía Tortugas, Baja California Sur, México (27° 41.6' N; 114° 53.3' W): Preliminary report on 1997-1998 CONABIO-sponsored expeditions. *Opisthobranch Newsletter* 25 (2): 5-7.
- BERTSCH, HANS & TERRENCE M. GOSLINER.  
1986. Anatomy, distribution, synonymy, and systematic relationships of *Asagema alba* (O'Donoghue, 1927) (Nudibranchia: Doridacea). *The Veliger* 29 (1): 123-128.
- BERTSCH, HANS & RICHARD C. WILLAN.  
1986. Occurrence of the nudibranch *Diaphorodoris lirulatocauda* in northwest Mexico. *The Festivus* 18 (10): 145.
- BERTSCH, HANS & ÁNGEL VALDÉS.  
In prep. Morphology and distributional records of *Doriopsis viridis* and *Facelina stearnsi* (Mollusca: Nudibranchia) from the La Paz region of Baja California Sur, Mexico.
- GOSLINER, TERRENCE M.  
1994. New records of Flabellinidae (Opisthobranchia: Aeolidacea) from the tropical Americas, with descriptions of two new species. *Proceedings of the California Academy of Sciences* 48 (9): 171-183.
- GOSLINER, TERRENCE M., MICHAEL T. GHISELIN & HANS BERTSCH.  
1985. Opisthobranch mollusks of the Punta Eugenia region, with a discussion of their biogeographic affinities. *Western Society of Malacologists, Annual Report* 17: 11.
- HANNA, G DALLAS.  
1951. A new west American nudibranch mollusk. *The Nautilus* 65 (1): 1-3.
- KEEN, A. MYRA.  
1971. Sea shells of tropical west America: Marine mollusks from Baja California to Peru. Stanford University Press, Stanford, CA, xiv + 1064 pp.
- MacFARLAND, FRANK MACE.  
1966. Studies of opisthobranchiate mollusks of the Pacific coast of North America. *Memoirs of the California Academy of Sciences* 6: xvi + 546 pp.
- MILLEN, SANDRA.  
1980. Range extensions, new distribution sites, and notes on the biology of sacoglossan opisthobranchs (Mollusca: Gastropoda) in British Columbia. *Canadian Journal of Zoology* 58: 1207-1209.
- ORTEA, JESÚS & EVA MARÍA LLERA.  
1981. Un nuevo dórido (Mollusca: Nudibranchiata) de la Isla Isabel, Nayarit, México. *Iberus* 1: 47-52.
- POORMAN, LEROY H. & DAVID K. MULLINER.  
1981. A new species of *Crosslandia* (Nudibranchia: Dendronotacea) from the Gulf of California. *The Nautilus* 95 (2): 96-99.
- REAKA-KUDLA, MARJORIE L., DON E. WILSON & EDWARD O. WILSON (eds.).  
1997. Biodiversity II: Understanding and protecting our biological

resources. Joseph Henry Press, Washington, D.C. v + 551 pp.  
VALDÉS, ÁNGEL & HANS BERTSCH.  
2000. Redescription and range extension of *Bathydoris aioca*

Marcus & Marcus, 1962 (Nudibranchia: Gnathodoridoidea). *The Veliger* 43 (2): 210-216.  
WILSON, EDWARD O. (ed.).  
1988. Biodiversity. National Academy Press, Washington, D.C. xiii + 521 pp.

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### THE VELIGER - STOHLER MEMORIAL FUND

A memorial fund has been set up in honor of Dr. Rudolf (Ruedi) Stohler. Appropriately, it honors him by insuring that *The Veliger*, the prestigious journal which he nurtured from its modest beginning, will continue to be able to help young malacologists as it has done in the past.

"... Ruedi ... laid the solid foundation on which we continue to build. In its early years, he personally financed *The Veliger*, and with the help of Jean and Crawford Cate, and other friends, built an endowment that continues to subsidize the journal's publication today.

*The Veliger* Board met recently and discussed options for honoring our founding editor. We decided to create a memorial fund and invite our members and friends to make a contribution in his memory. These donations will be used to enhance the endowment that provides grants to students with limited resources to cover their page charges. Ruedi provided many of today's prominent malacologists with their first opportunity to publish in a scientific journal, and

we think it highly appropriate to continue this important tradition in his name. We plan to dedicate the October issue in his memory, and contributors who make donations before July 31 will be acknowledged in this issue.

Please make your tax-deductible contributions to:

The Veliger - Stohler Memorial Fund  
Dr. Henry Chaney, Secretary  
Santa Barbara Museum of Natural History  
2559 Puesta del Sol Road  
Santa Barbara, CA 93105-2936, USA"

Sincerely,

Dr. William K. Emerson  
Chair, Rudolf Stohler Memorial Fund

Dr. Terrence M. Gosliner  
President, California Malacozoological Society, Inc.

---



## DR. RUDOLF (RUEDI) STOHLER

December 5, 1901 - April 24, 2000

It is with sadness that we report the passing of Rudolf Stohler at the age of 98. He died on 24 April of heart failure at his home in Berkeley, California. Ruedi, born and raised in Basel, Switzerland, was interested in nature from early childhood and was a collector of all manner of objects natural and otherwise. He attended universities in Basel and Geneva and earned PhDs in both Zoology and Botany.

Dr. Stohler first came to the United States in 1928 on an International Exchange Fellowship at the Hooper Foundation for Medical Research in San Francisco. It was there that he worked on the problem of paralytic shellfish poisoning, proving that the red tide flagellates ingested by mussels and clams made them poisonous and that all other organisms feeding on the bivalves would also be toxic (Smith, 1983). It was as a result of his work that public health officials began a monitoring program, posting warnings during the occurrences of the toxic micro-organisms affecting the clams and mussels. At the September 1964 meeting of the San Diego Shell Club, Ruedi spoke of his work lightheartedly, advising members about eating mussels safely. He said, "...boil them, drain off the liquid, then open and discard the shells — now, throw away what remains" (Anon. 1964).

It was during his time at the Hooper Foundation that he met and married Genevieve J. Emerson, a premedical student working there as a laboratory technician. They went back together to Switzerland when Ruedi's fellowship was over and returned to the United States in 1932. Ruedi then became a citizen of this country, and together they raised a family of five children. In 1933 he was made a Research Associate at the University of California, Berkeley, where he started teaching a class in cytology and courses in zoology and biology at the university extension. He was the Curator of the Museum of Invertebrate Zoology at the university until his retirement in 1969.

He began collecting shells in 1941, being most interested in speciation and population genetics. With several colleagues, he founded the Northern California Malacozoological Club in 1952 and *The Veliger*, the Club's newsletter, was born in 1958. Ruedi named it *The Veliger* because he "hoped it would always continue



Dr. Rudolf Stohler. Photo: James H. McLean. With kind permission of the California Malacozoological Society, Inc. [*The Veliger*].

to grow" (Cate, 1964). Ruedi became editor with Volume 2, doing the typing on an electric typewriter (the latest in technology then), collating on the dining room table, pre-addressing and sorting the envelopes, filling the mailbags by zip code and delivering them to the post office. For a fascinating read on these early years, see Cate, 1989. Under Ruedi's editorship (through Volume 25, in 1983) the mimeographed newsletter grew to become the distinguished journal we know today.

Besides being the founding editor of the premier journal, *The Veliger*, and a respected scientist (Cate, 1964, 1989; Smith, 1983), Ruedi was a good friend to the San Diego Shell Club, an Honorary Life Member since 1965. Long-time members of the Club remember him with great affection; he spoke to the Club on several occasions in the 1960s, wrote articles for *The Festivus*, made the Club a part of his research on *Olivella biplicata*, and through his efforts, the *News of the Western Association of Shell Clubs* was born in 1961

and continued until 1969 as a vehicle for west coast shell clubs to share news. The four west coast clubs sent their news to Dr. Stohler's daughter Heidi, who put the bimonthly publication together and sent it out to member clubs.

The "Olivella Dives," the Club's part in Dr. Stohler's research on growth in the species *Olivella biplicata* (Sowerby, 1825), were a great adventure for those members who participated during the nine years of the project from 27 July 1959 to 13 July 1968. See the writeups in *News of the Western Association of Shell Clubs* [San Diego Shell Club] listed below. His early work on *O. biplicata* was published in *The Nautilus* (Stohler, 1952, 1959c, 1960a, b) and the results of the *O. biplicata* project were published in *The Veliger* (Stohler, 1962, 1969).

Ruedi was known for his many kindnesses to students and amateurs, encouraging them to publish their first papers, many in *The Veliger*. *The Festivus* has received letters and phone calls from Ruedi expressing his pleasure in issues he had received. Even after he was totally blind, he told me that his wife, Genevieve, read every issue of *The Festivus* to him.

The malacological world has lost a giant of a man.

#### Molluscan Species Described by Rudolf Stohler

*Astraea (Uvanilla) rupicollina* Stohler, 1959 = *A. turbanica* (Dall, 1910).

*Macrarene coronadensis* Stohler, 1959 = *Arene (Macrarene) coronadensis* (Stohler, 1959) = ? *Arene (Macrarene) californica* (Dall, 1908).

#### Taxa named in honor of Rudolf Stohler

Subgenus *Stohleria* Coan, 1984

*Lepidozona (Lepidozona) stohleri* Ferreira, 1985

*Terebra stohleri* Bratcher & Burch, 1970

*Acanthodoris stohleri* Lance, 1968 = *A. pina* Marcus & Marcus, 1967.

*Flabellina stohleri* Bertsch & Ferreira, 1974 = *F. telja* Marcus & Marcus, 1967.

#### Papers on Molluscan topics by Rudolf Stohler

1930. Beitrag zur kenntnis der Geschlechtszyklus von *Mytilus californianus*. *Zoologischer Anzeiger* 90(9-12): 263-268. (15 September)

1950. Studies on mollusks populations: I. The *Nautilus* 64(2): 47-51. (October)



Figure 2. *Lepidozona (Lepidozona) stohleri* Ferreira, 1985. Bahía de los Angeles, Golfo de California, dredged, 70-130 ft., May 1976. Photo: Paul Skoglund.

1952. Studies on mollusk populations: II. The *Nautilus* 65(4): 135-137. (April)

1955. Studies on mollusk populations — III. [Abstract] *Annual Report of the American Malacological Union* #22: 15. (31 December)

1958. Studies on mollusk populations: IIIa. The *Nautilus* 71(4): 129-131, pl. 10. (April)

1959a. Why rules of priority. *The Veliger* 1(3): 17-18. (1 January)

1959b. Two new species of west North American marine gastropods. *Proceedings of the California Academy of Sciences* 29(11): 423-444, figs. 1-10. (27 February)

1959c. Why rules of priority? *The Veliger* 1(4): 36-38. (1 April)

1959d. Range extension of some west N.A. marines. The *Nautilus* 72(4): 127-130. (April)

1959e. Why rules of priority? *The Veliger* 2(1): 17-18. (1 July)

1959f. The Red Tide of 1958 at Ensenada, Baja



- California, Mexico. The Veliger 2(2): 32-35, pls. 6, 7. (1 October)
- 1959g. How to build a private collection which is scientifically valuable. The Veliger 2(2): 39-40. (1 October)
- 1959h. Studies on mollusk populations: 4. The Nautilus 73(2): 65-72h, figs. 1-3, tables 1-3. (October)
- 1960a. Studies on mollusk populations: IV (cont'd). The Nautilus 73(3): 95-103. (January)
- 1960b. Fluctuations in mollusk populations after a red tide in the estero de Punta Banda, Lower California, Mexico. The Veliger 3(1): 23-28, pl. 4. (1 July)
- 1961a. To describe? - or NOT to describe? The Veliger 3(3): 84-87. (1 January)
- 1961b. What's the difference? The Veliger 3(4): 113-114. (1 April)
- 1961c. Comments on the proposal to place the generic name *Gari* Schumacher, 1817, on the official list unemended. Bulletin of Zoological Nomenclature 18: 299. (November)
- 1962a. Preliminary report on growth studies in *Olivella biplicata*. The Veliger 4(3): 150-151, pl. 36. (1 January)
- 1962b. What's the difference? Genotype - Phenotype. The Veliger 4(3): 162-163. (1 January)
- 1962c. What's the difference? Holotype - Paratype - Syntype - Hypotype. The Veliger 4(4): 217-218. (1 April)
- 1962d. What's the difference? Topotype - Homeotype - Plastotype - Lectotype - Neotype. The Veliger 5(1): 58-59. (1 July)
- 1962e. The disposition of type specimens. The Veliger 5(2): 95-97. (1 October)
1963. Studies on mollusk populations. V. — *Tegula rugosa* (A. Adams, 1853). The Veliger 5(3): 117-121, 4 text figs. (1 January)
1964. Studies on mollusk populations VI. — *Tegula funebris* (A. Adams, 1855). The Veliger 6 (Supplement) pp. 77-81, figs. 1-5. (15 November)
- 1969a. Growth study in *Olivella biplicata* (Sowerby, 1825). The Veliger 11(3): 259-267, 1 map, 1 text fig., 11 tables. (1 January)
- 1969b. The type of *Tegula funebris* (A. Adams, 1855). The Veliger 11(4): 406-407, figs. 1-10, 1 table. (1 April)
- 1969c. Growth studies on *Olivella biplicata* (Sowerby, 1825) [Abstract]. In Proceedings of the Third European Malacological Congress (Vienna, 4-6



Figure 3. *Terebra stohleri* Bratcher & Burch, 1970, holotype, 21.4 mm. From *Living Terebras of the World*. With the kind permission of Twila Bratcher Critchlow.

- September 1968). Malacologia 9(1): 290.
1986. Watch your language. The Festivus 18(5): 54. (8 May)
1987. Common shell names. The Festivus 19(4): 36, 37. (9 April)
- 1964b. The biology of *Tegula funebris* (A. Adams, 1855). Abbott, D. P., L. R. Blinks, J. H. Phillips & R. Stohler, editors. The Veliger 6 (Supplement) pp. 1-82. (15 November)

## Literature Cited

### ANONYMOUS

1964. And, Dr. Rudolf Stohler. News of the Western Association of Shell Clubs [San Diego Shell Club] 5(6): D22. (1 November)
- 1966a. Olivella dive. *ibid.* 7(3): D12. (1 May)
- 1966b. Olivella dive. *ibid.* 7(5): D16. (1 September)
- 1968a. Olivella dive. *ibid.* 9(1): P6. (1 January)
- 1968b. Olivella dive. *ibid.* 9(3): D16. (1 July)

### BRATCHER, TWILA

1963. New ecological record? News of the Western Association of Shell Clubs [San Diego Shell Club]. 4(6): D22. (1 November)

### BREWER, BLANCHE

- 1966a. Olivella dive. *ibid.* 6(7) [sic] 7(1): D53, 54. (1 January)
- 1966b. Olivella dive. *ibid.* 7(6): D17. (1 November)
1968. Olivella dive. *ibid.* 9(4): D19, 20. (1 October)

### BREWER, BLANCHE [editor]

1969. Activity report. *ibid.* 10(2): D2. (1 April)

### CATE, JEAN M.

1964. Biographical sketch Rudolf Stohler. News of the Western Association of Shell Clubs [Conchological Club of Southern California] 5(1): S1-S3. (1 January)
1989. A personal history of *The Veliger* and the California Malacozoological Society, Inc. The Veliger 32(2): 101-108, figs. 1, 2. (3 April)

### DILWORTH, BILLEE (aka Billee Gerrodette)

1967. Olivella dive. News of the Western Association of Shell Clubs [San Diego Shell Club] 8(5): D15. (1 September)

### SMITH, R. I.

1983. Our thanks to Rudolf Stohler. The Veliger 26(1): 2-4, 2 figs. (1 July)

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# THE FESTIVUS

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Meeting date: third Thursday, 7:30 PM,  
Room 104, Casa Del Prado, Balboa Park, San Diego

## PROGRAM

### Meanderings in the Vizcaino Biosphere Reserve

Dr. Hans Bertsch will present an illustrated talk on regions of the Baja California peninsula — Punta  
marine biology research in one of the most isolated Eugenia, Bahía Tortugas and the nearby Isla Cedros.

Meeting date: August 17, 2000

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## CLUB NEWS

### Minutes of the San Diego Shell Club Meeting - July 20, 2000

President Mike Mason welcomed everyone and called the meeting to order at 7:45 p.m. Guests for the evening, Jeremy and Christine Hutsell, were welcomed. The minutes of the June meeting were approved as written in *The Festivus*.

Librarian Linda Hutsell said that the club purchased a copy of the recently published, *Chitons of the World*. It will be available for circulation at the next meeting. The new bivalve book, *Bivalve Seashells of Western North America*, is available for purchase for \$99 plus tax. A copy has been donated to the club by the authors and the book will be reviewed in *The Festivus*. Paul Valentich Scott will be the speaker at the October meeting and will also sign his books.

Nancy Schneider is considering accepting the position of Historian. The September Party, another "Munchie Madness," will again be at the Arnold's house and garden on Saturday evening, September 16<sup>th</sup>. [For further information, see map on last page of this issue.]

Kim Hutsell introduced members Kay Klaus and Mike Mason, who spoke to the group about their recent trip to the Philippines. They visited three areas: Luzon, Bohol, and Cebu. On their first day, they toured a cave in Bohol. They also showed pictures of a very interesting set of limestone mounds called the Chocolate Hills.

Kay learned to dive during this trip to the Philippines and showed some underwater pictures. Mike said that Cebu and all of the Mactan Island area is overpopulated. Dynamite fishing is done on a regular basis, devastating entire areas. There were almost no shells and no coral. Bohol was quite different. A guide is required to dive there and certain areas were closed to divers. Mike said that Cabalau was the best dive spot that they went to. A discussion ensued about the devastation of the natural habitats given the poor conditions of the country's residents.

The winner of the shell drawing prize was Bill Romer. The meeting was adjourned at 8:55 p.m.

Silvana Vollero

### A Generous Donation to the Club

Member Gladys Weber of Modesto, California, has donated some fine books and several boxes of shells to the Club. The shells will make their way into the next Club auction and any of the books not already in the Club's library will be placed there and the rest sold, with the proceeds to be used to purchase new books for the library.

The Club is indebted to Gladys for her generous donation.

### Additional Plastic Boxes Donated to the Club

Two additional cartons of used plastic boxes and one box of new plastic boxes have been donated to the Club by Ursula and Don Shasky. The new boxes will be available for sale along with the others they donated. The used boxes will be set out at meetings, free to those who can use them.

The Club's thanks to the Shaskys, once again, for this useful donation.

### A New Book for the Club Library

A copy of *Bivalve Seashells of Western North America Marine Bivalve Mollusks from Arctic Alaska to Baja California* will be available for circulation in the Club library at the August meeting.

The book was kindly donated to the Club by authors, Eugene V. Coan and Paul Valentich Scott. A review of the volume will appear in the September issue of *The Festivus*.

### The Western Society of Malacologists — 2001

The next annual meeting of the Western Society of Malacologists (WSM) in 2001 will be held here in San Diego from 27 to 30 June 2001.

President Hans Bertsch has already reserved a convenient meeting site at the Ramada Inn and Conference Center in Kearny Mesa.

This will be a fine opportunity for Club members to participate in this conference. Stay tuned.



# NEW MOLLUSCAN RANGE EXTENSIONS AND AN UNDESCRIBED THYASIRID FROM ISLA SAN MARCOS IN THE GOLFO DE CALIFORNIA, MÉXICO

MARGARET MULLINER

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E-mail: mulliner1@juno.com

In October 1999 my husband and I went on our annual dredging trip to Baja California and found a new area, Isla San Marcos, 15 km south of Santa Rosalia, Baja California Sur, México. We camped at the San Lucas RV Park, spending about 20 days dredging off the west side of Isla San Marcos.

The following list is of the 15 range extensions of molluscan species and one undescribed species that we dredged in 20-50 m, on sand and broken shell/rubble bottom. The specimens are all in the Mulliner collection.

The taxonomic arrangement is by Keen (1971) as modified by Vaught (1989) and Skoglund (1991,1992). Numbers from Keen (1971) are used where possible. Identification of material was confirmed by Carol Skoglund of Phoenix, Arizona. All material was collected dead. Number of specimens and previously published distributional records for each species are included.

I wish to thank Eugene Coan, Kim Hutsell, Paul Valentich Scott and Carol Skoglund, for help in identifying the species, Dave Mulliner for photography and Carole Hertz for help in setting up the paper.

## LITERATURE CITED

- BERNARD, FRANK R.  
1976. Living Chamidae of the eastern Pacific (Bivalvia: Heterodonta). Natural History Museum of Los Angeles Contributions in Science 278: 1-43, figs. 1-12.
- BERNARD, FRANK R., S. M. MCKINNEL & G. S. JAMIESON  
1991. Distribution and zoogeography of the Bivalvia of the eastern Pacific Ocean. Canadian Special Publication of Fisheries and Aquatic Sciences 112, 60 pp., figs. 1-29.
- BRATCHER, TWILA & R. D. BURCH  
1971. The Terebridae (Gastropoda) of Clarión, Socorro, Cocos and Galápagos Islands. Proceedings of the California Academy of Sciences 37(21): 537-566, figs. 1-33.
- BRATCHER, TWILA & WALTER O. CERNOHORSKY  
1987. Living Terebras of the World. A Monograph of the Recent Terebridae of the World. American Malacologists, Inc. 240 pp., 68 pls.
- COAN, EUGENE V. & PAUL H. SCOTT  
1997. Checklist of the marine bivalves of the northeastern Pacific Ocean. Santa Barbara Museum of Natural History Contributions in Science 1: 1-28, 12 figs.
- COSEL, RUDO VON  
1984. Moluscos marinos de la Isla de Gorgona (costa del Pacífico Colombiano). Anales del Instituto de Investigaciones Marinas de Punta de Betín 14: 175-257, figs. 1-42.
- DUSHANE, HELEN,  
1962. A checklist of mollusks for Puertecitos, Baja California, Mexico. The Veliger 5(1): 39-50.
- DUSHANE, HELEN & ELLEN BRENNAN  
1969. A preliminary survey of mollusks for Consag rock and adjacent areas, Gulf of California, Mexico. The Veliger 11(4): 351-363, 1 map.
- DUSHANE, HELEN & ROY POORMAN  
1967. A checklist of mollusks for Guaymas, Sonora, Mexico. The Veliger 9(4): 413-441.
- FINET, YVES  
1985. Preliminary faunal list of the marine mollusks of the Galápagos Islands. Institut Royal des Sciences Naturelles de Belgique. Documents de Travail 20: 50 pp.
- HERTZ, CAROLE M., JOYCE GEMMELL & BARBARA W. MYERS.  
2000. Turridae (Mollusca: Gastropoda) from the San Felipe area, Baja California, México, in the Gemmell Collection. The Festivus 32(6): 81-96, figs. 1-42.
- HOAGLAND, ELAINE K.  
1977. Systematic review of fossil and Recent *Crepidula* and discussion of the evolution of the Calyptraeidae. Malacologia 16(2): 353-420, figs. 1-28.
- KEEN, A. MYRA  
1971. Sea Shells of Tropical West America. Second edition. Stanford University Press, Stanford, CA i-xiv +1064 pp., 22 color pls., ca 4000 text figs.
- KEEN, A. MYRA & EUGENE V. COAN

1975. "Sea Shells of Tropical West America": additions and corrections to 1975. The Western Society of Malacologists Occasional Paper 1, 66 pp.
- MONTOYA, MICHEL & KIRSTIE L. KAISER  
1988. Biogeographical notes on the genus *Terebra* (Gastropoda: Terebridae) at Isla del Coco, Costa Rica. *Revista de Biología Tropical* 36(2B): 569-574, figs. 1-13.
- PONDER, WINSTON  
1983. A revision of the Recent Xenophoridae of the world and of the Australian fossil species (Mollusca: Gastropoda). *Australian Museum Memoirs* 17: 126 pp., figs. 1-42.
- POORMAN, FORREST L. & LEROY H. POORMAN  
1988. A report of the molluscan species in the San Carlos rectangle, Sonora, Mexico, collected by Forrest L. and Leroy H. Poorman from December 1953 to December 1983. *The Festivus* 20(6): 47-63, 1 map.
- SKOGLUND, CAROL  
1974. Intertidal marine Mollusca of Cape Tepoca, Sonora, Mexico. Unpublished Master of Science Thesis, Arizona State University, 17 pp.
- 1990a. Panamic Province molluscan range extensions from Bahía Cocos, Costa Rica. *The Festivus* 22(9): 100.
- 1990b. Molluscan range extensions to Playas de Villamil, Guayas, Ecuador. *The Festivus* 22(11): 119-121.
- 1991a. Additions to the Panamic Province bivalve (Mollusca) literature 1971 to 1990. *The Festivus* 22 (supplement 2). 74 pp.
- 1991b. Panamic range extensions for *Drillia* (Gastropoda: Turridae). *The Festivus* 23(6): 47.
1992. Additions to the Panamic Province gastropod (Mollusca) literature 1971 to 1992. *The Festivus* 24 (supplement). 169 pp.
- VAUGHT, KATHERINE C.  
1989. A Classification of the Living Mollusca. American Malacologists, Inc. Melbourne, Florida. 195 pp.

## Keen No. Species and Remarks

### BIVALVIA

- 117 *Tucetona strigilata* (Sowerby, 1833), 1 specimen, previously known from Guaymas, Sonora, México, to Ecuador (Keen, 1971); Isla del Coco, Costa Rica (Bernard, McKinnell & Jamieson, 1991). This brings the range across the Gulf (Figure 1).
- 301 *Thyasira* sp., 11 valves. Undescribed (pers. com., Valentich Scott, June 2000) (Figure 2).
- 310 *Amerycina cultrata* Keen, 1971, 1 specimen, previously known from Isla Partida, Isla Espíritu Santo, near La Paz, Baja California Sur (Keen, 1971); north to Guaymas, Sonora, México (Keen & Coan, 1975) (Figure 3).



Figure 1. *Tucetona strigilata* (Sowerby, 1833), 29.9 mm. Photo: D.K. Mulliner.



Figure 2. *Thyasira* species undescribed, 10.1 mm. Photo: D. K. Mulliner.





Figure 3. *Amerycina cultrata* Keen, 1971, 14.6 mm. Photo: D. K. Mulliner.

- 353 *Arcinella californica* (Dall, 1903), 2 top valves, previously known from Isla Cedros, Baja California to Panamá (Keen, 1971); into the Golfo de California at Bahía San Carlos, Sonora, México (DuShane & Poorman, 1967); south to Colombia (Bernard, 1976). This brings the range across the Golfo de California.

- 614 *Solecurtus guaymasensis* Lowe, 1935, 13 valves + 1 specimen, previously known from Bahía San Carlos, Sonora, México (DuShane & Poorman, 1967); off Isla Cedros, Baja California, to Golfo de Chiriquí, Panamá (Keen, 1971); Islas Galápagos, Ecuador (Finet, 1985); to southern California (Coan & Scott, 1997). This brings the range across the Golfo de California.

#### GASTROPODA

- 750 *Niso interrupta* (Sowerby, 1834), 10 specimens, previously known from Isla San Pedro Martír, off Sonora, México, to Guayaquil, Ecuador (Keen, 1971). This brings the range across the Golfo de California (Figure 4).



Figure 4. *Niso interrupta* (Sowerby, 1834), 29.5 mm. Photo: D. K. Mulliner.

- 814 *Crepidula onyx* Sowerby, 1824, 1 specimen, previously known from Southern California to Chile (Keen, 1971); San Pedro, California, to Costa Rica and possibly Panamá (Hoagland, 1977); Isla Gorgona, Colombia (Cosel, 1984); Islas Galápagos, Ecuador (Finet, 1985). This is the first published report of the species in the Golfo de California.

- 837 *Xenophora conchyliophora* (Born, 1780), 1 specimen, previously known from Guaymas, Sonora, to La Paz, Baja California Sur, Golfo de Tehuantepec, México (Keen, 1971); Puerto Peñasco to Golfo de Panamá (Ponder, 1983); Guayas Province, Ecuador (Skoglund, 1990b). This is the first report of the species north of La Paz on the Baja side of the Golfo de California.

- 1522 *Terebra armillata* Hinds, 1844, 13 specimens, previously known from Puertecitos (DuShane, 1962); Bahía Santa Maria, Baja California, México, to Perú (Keen, 1971); Islas Galápagos, Ecuador (Bratcher & Burch, 1971); Isla del Coco, Costa Rica (Montoya & Kaiser, 1988). This is the first report of the species on the Baja side of the southern Golfo de California.

- *Terebra guayaquilensis* E. A. Smith, 1880, [Keen #1535, left figure], 9 specimens, previously known from Roca Consag [as *T. ira* Pilsbry & Lowe, 1932] (DuShane & Brennan, 1969); west coast of Baja California, México, to Ecuador (Bratcher & Cernohorsky, 1987); Isla del Coco, Costa Rica (Montoya & Kaiser, 1988); Islas Galápagos, Ecuador (Finet, 1985). This is the first report of the species in the southern Golfo de California on the Baja California side.

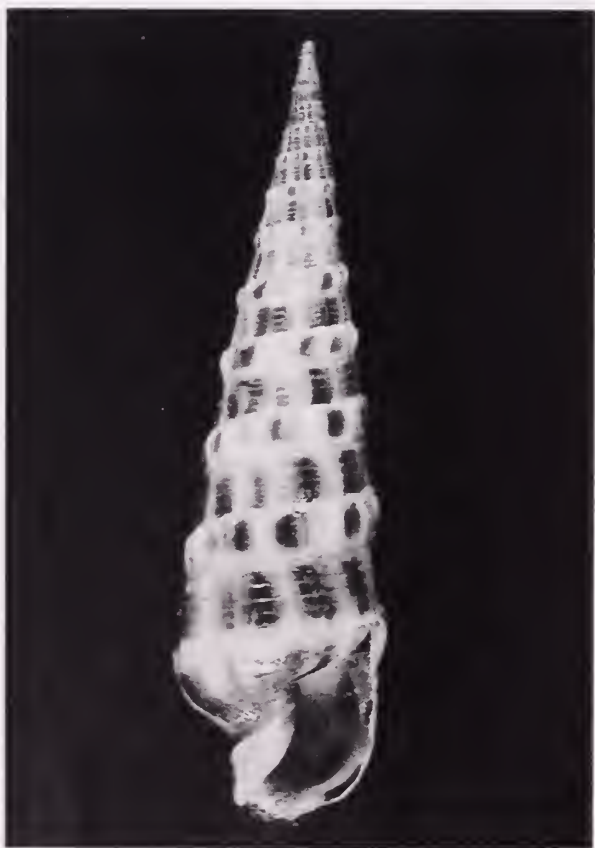


Figure 5. *Terebra variegata* Gray, 1834, 37.9 mm. Photo: D. K. Mulliner.



Figure 6. *Diptychophlia occata* (Hinds, 1843), 9.9 mm. Photo: D. K. Mulliner.

- 1571 *Terebra variegata* Gray, 1834, 11 specimens, previously known from Puertecitos (DuShane, 1962); Bahía Santa Maria, Baja California Sur, México, Islas Galápagos (Bratcher & Cernohorsky, 1987); Isla del Coco, Costa Rica (Montoya & Kaiser, 1988). This is the first report of the species on the Baja side of the southern Golfo de California (Figure 5).
- 1579 *Calliclava alcmene* Dall, 1919, 1 specimen, previously known from the northern Golfo de California at Isla Tiburón to Isla Espíritu Santo in the south (Keen, 1971). This brings the range north from Espíritu Santo on the Baja side of the Golfo de California.
- 1627 *Drillia salvadorica* (Hertlein & Strong, 1851), 2 specimens, previously known from the northern Golfo de California at Isla Tiburón to



- La Libertad, El Salvador (Keen, 1971); off Golfito, Puntarenas Province, Costa Rica (Skoglund, 1991b). This brings the range across the Golfo de California to off Isla San Marcos.
- 1655 *Cochlespira cedonulli* (Reeve, 1843), 1 specimen, previously known from the northern Golfo de California at Isla Tiburón, to Puerto Utría, Colombia (Keen, 1971). This brings the range across the Golfo de California to off Isla San Marcos.
- 1702 *Crassispira xanti* Hertlein & Strong, 1951, 2 specimens, previously known from Agua Chale (San Felipe area) (Hertz, Gemmell & Myers, 2000); Punta Lobos, Sonora, México to Santa Elena Bay, Ecuador (Keen, 1971). This brings the range south on the Baja side of the Golfo de California.
- 1773 *Diptychophlia occata* (Hinds, 1843), 1 specimen, previously known from Guaymas, Sonora, México to Puerto Utría, Colombia (Keen, 1971). The brings the range across the Golfo de California to Baja California (Figure 6).

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### ADDITION AND CORRECTION

**Addition:** Thanks to a note from Lindsey Groves of the Museum of Natural History of Los Angeles County, we learned of an additional genus and species named for the late Rudolf Stohler which should be included in C.M. Hertz (2000) [*The Festivus* 32(7): 105-107] — a valid species of ovulid, *Stohleroma stohleri* Cate, 1973.

**Correction:** It has just been brought to our attention that in Skoglund (2000) [*Spondylus linguae felis* Sowerby, 1847 ... in the Panamic Province, with notes on the occurrence of *Spondylus nicobaricus* Schreibers, 1793 [*The Festivus* 32(1): 3-7, pl. 1 & figs. 1-3]], there is a reversal of photographs. On Page 5, Figure 3 is the Roca Partida specimen and Figure 2 is the Isla Jicarita specimen. We apologize to the author and thank Kirstie Kaiser for notifying us of the error.

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## CATALOG OF RECENT AND FOSSIL CYPRAEIDAE AND EOCYPRAEINAE (OVULIDAE): 1994 through 1999

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### INTRODUCTION

Groves (1994a) published a lengthy catalog of cypraeid and eocypraeid taxa described subsequent to Schilder & Schilder (1971). Herein is a list of taxa described since Groves (1994a), those inadvertently omitted, and additional information received and/or determined after publication. Four taxa described prior to 1971 that were not included in Schilder & Schilder (1971) are also included. Names introduced without descriptions are not included.

Seventy-six taxa of cypraeids and eocypraeids are treated herein, of which 28 are Recent taxa and 48 are fossil taxa. Of the Recent taxa 23 were described as new, two were not included in Groves (1994a), and three are updated. Of the fossil taxa 42 are described as new, four were not included in Groves (1994a), and two are updated. Taxonomic allocations listed in the **Remarks** sections, unless cited otherwise, represent the opinion of the author.

### ABBREVIATIONS

The following abbreviations are used herein for locality and/or type numbers.

AMNH = American Museum of Natural History, New York, NY, USA.

FAU = Florida Atlantic University, Boca Raton, Florida, USA.

GMANH = Graves Museum of Archaeology and Natural History, Dania, Florida, USA.

HNC = Haus der Natur, Cismar, Germany.

HUJ = Hebrew University, Jerusalem, Israel.

IO = Institute of Oceanology, Academia Sinica, Qingdao, China.

KBIN = Koninklijk Belgisch Instituut voor

Naturuwetenschappen, Brussels, Belgium.

LACMIP = Natural History Museum of Los Angeles County, Invertebrate Paleontology Section, Los Angeles, California, USA.

MFM = Mizunami Fossil Museum, Mizunami, Gifu Prefecture, Japan.

MNHN = Muséum National d'Histoire Naturelle, Paris, France.

MUG = Miyagi University of Education, Department of Geology, Sendai, Japan.

NSMT = National Science Museum Tokyo, Japan.

NHB = Naturhistorisches Museum, Basel, Switzerland.

PRI = Paleontological Research Institution, Ithaca, New York, USA.

SBMNH = Santa Barbara Museum of Natural History, Santa Barbara, California, USA.

SMF = Senckenberg Museum, Frankfurt, Germany.

UCMP = University of California, Museum of Paleontology, Berkeley, USA.

UF = Florida Museum of Natural History, University of Florida, Gainesville, Florida, USA.

USNM = National Museum of Natural History, Smithsonian Institution, Washington DC, USA.

### ACKNOWLEDGMENTS

Many thanks to all who contributed to this project. Jiri Zidek, editor of the now defunct *The Cowry new series* (New Mexico Bureau of Mines & Mineral Resources, Socorro, New Mexico) suggested the original catalog (Groves, 1994a) and subsequent updates. Andre Delsaerd (Aarschot, Belgium), Dirk Fehse (Berlin, Germany), Richard Goldberg (Columbia, Maryland), Felix Lorenz (Gießen, Germany), Eduard L. Heiman (Rehovot, Israel), Hitoshi Ikeda (Kanagawa, Japan), Luc Notelteirs (Belgium), Werner Massier



(Cape Town, South Africa), Ed Petuch (FAU), and Susumu Tomida (Tokyo, Japan) provided reprints and/or pertinent papers. Richard E. Petit (North Myrtle Beach, South Carolina) provided pertinent pages of an extremely obscure reference [Tessier, 1952]. James H. McLean (LACM, Malacology) reviewed the original manuscript.

## RECENT TAXA

### Family Cypraeidae

*albanyensis* [*Zoila* (*Zoila*) *marginata*] Raybaudi, [1985:9, fig. 7A], 1994b:21-23, figs. 103-109. King George Sound, Albany, Western Australia. Holotype presumably in the collection of L. Raybaudi Massilia, Rome, Italy; 1 paratype in the Tokyo Institute of Malacology, Tokyo, Japan.

**Remarks:** Groves (1994a) considered the following subspecific taxa of the *Zoila marginata* "group" to be synonymous with the nominal species: *Z. marginata albanyensis* Raybaudi, 1994b; *Z. m. ketyana* Raybaudi, 1978; and *Z. m. raybaudii* Lorenz, 1992. However, the recent works of Biraghi (1993; 1994), Raybaudi (1993a-c; 1994a-c), Lorenz (1992), Lorenz & Hubert (1993), and Wilson (1993) clearly demonstrate that there are at least four distinct subspecies within the group. *Zoila marginata consueta* Biraghi, 1993 is considered to be a junior synonym of *Z. marginata* s.s. (Wilson, 1993).

Raybaudi (1985) originally introduced the subspecific name *Z. marginata albanyensis* in a price list without a valid description, designation of type material and/or type locality, and without comparison to similar species. In 1994b he officially described the subspecies and designated type material and type locality.

*alfrediana* [*Cypraeovula-Luponia* *amphiithales*] Raybaudi, 1994d:12-13, figs. 10-14. Presumably from off Port Alfred, Cape Prov., South Africa but not designated. Type material not designated.

**Remarks:** Apparent hybrid of *Cypraeovula capensis* (Gray, 1828) and *C. alfredensis* Schilder & Schilder, 1929). This name is invalidated as per ICZN, Article 1(b) (3), which states that hybrids are excluded from the provisions of the code. Therefore, this taxon is considered a junior synonym of *C. amphiithales* (Melville, 1888).

*androyensis* [*Palmadusta*] Blöcher & Lorenz, 1999:13-

14, fig. 1, pl. 3, figs. 1-3. Between deltas of Mandrare and Manambovo Rivers, southwest of Fort Dauphin, southern Madagascar. Holotype HNC 52872, 1 paratype HNC 52873, 2 paratypes in the collection of M. Blöcher, Duisburg, Germany, 1 paratype in the collection of F. Lorenz, Gießen, Germany.

*bealsi* [*Erronea*] Mock, 1996:63-66, figs. 1-6. In fish trap from 220-260 m off Talikud Id. [= Talicod Id.], Davao Gulf, Davao Province, Mindanao Id., Philippines (approx. 6°89'N, 125°69'E). Holotype SBMNH 143416, 1 paratype SBMNH 143417, 1 paratype in collection of M. Beals (Inglewood, California).

**Remarks:** Probably a deep water form of *E. hungerfordi* (Sowerby, 1888).

*clavicola* [*Bistolida stolidi*] Lorenz, 1998:56-58, figs. 73 [radula], 74 [right fig.], pl. 26, figs. 1-6. Off Nungwi village, northern Zanzibar, Tanzania. Holotype HNC 48715, 3 paratypes HNC 48716-48718, 7 paratypes in collection of F. Lorenz, Gießen, Germany.

**Remarks:** Possibly a junior synonym of *B. stolidi* (Linné, 1758).

*delicatura* [*Zoila*] Chandler & DuRoss, 1997:65, 15 unnumbered figs. Off the northwest shelf of Western Australia, near the Monte Bello Islands. Holotype in Western Australian Museum, Perth.

**Remarks:** Probably a junior synonym of *Z. eludens* Raybaudi, 1991.

*donghaiensis* [*Erronea* (*Adusta*)] Ma, 1997:78-79, 260-261, pl. 6, fig. 3. In 90-100 m depth, northeast of Okinawa, East China Sea (27°50'N, 126°00'E). Holotype IO M37330.

**Remarks:** Junior synonym of *E. (A.) hungerfordi* (Sowerby, 1888).

*ganteri* [*Cribrarula cribraria*] Lorenz, 1997:1-2, pl. 1, figs. 1-7. Beach at Mount Lavinia, 10 km south of Colombo, Sri Lanka. Holotype HNC 44662, 7 paratypes in collection F. Lorenz, Gießen, Germany.

**Remarks:** Possibly a junior synonym of *C. cribrarula* (Linné, 1758).

*gonubiensis* [*Cypraeovula capensis*] Massier, 1993:21-26, fig. 1 (left fig.) [radula], pl. 5, figs. 1-7, 13. Gonubie, northeast of London, Cape Province, South Africa. Holotype HNC 30807, 1 paratype HNC 30809, 2 paratypes in the collection of W. Massier, Margate,

Natal, South Africa, and 1 paratype in the collection of F. Lorenz, Gießen, Germany.

**Remarks:** Possibly a junior synonym of *Cypraeovula capensis* (Gray, 1828). Treated as a form by Lorenz & Hubert, 1993.

*Hiraseadusta* Shikama, 1971:103. Type species: *Cypraea hirasei* Roberts, 1913.

**Remarks:** Subjective synonym of *Nesiocypraea* Azuma & Kuroda, 1967.

*iutsuina* [*Cypraeovula-Crossia amphithales*] Raybaudi, 1995c:70-72, figs. 13-17. Presumably from deep water off Algoa Bay/Port Alfred, Cape Prov., South Africa. Holotype in the collection of L. Raybaudi Massilia, Rome, Italy.

**Remarks:** Apparent hybrid of *Cypraeovula* (*Crossia*) *iutsui* Shikama, 1974 and *C. capensis* (Gray, 1828). This taxon is considered a junior synonym of *C. iutsui* Shikama, 1974 (see ICZN note on p. 117).

*jandeprezi* [*Pustularia*] Poppe & Martin, 1997:81-88, pl. 1, figs 1-5. South of Borongan, Samar, the Philippines. Holotype MNHN, 1 paratype KBIN, Brussels, Belgium, 1 paratype AMNH, 4 paratypes in collection of G. Poppe, Berchem, Belgium, 1 paratype in collection P. Martin, Brussels, Belgium, and 4 paratypes in the collection of J. Deprez, Belgium.

**Remarks:** Junior synonym of *P. bistrinotata* Schilder & Schilder, 1937.

*ketyana* [*Cypraea* (*Zoila*) *marginata*] Raybaudi, 1978.

**Remarks:** A valid subspecies of *Z. marginata* (Gaskoin, 1849) (see *albanyensis*, [*Z. marginata*]). See Groves (1994a) for type material, type locality and original citation.

*Kurodadusta* Shikama, 1971:103. Type species: *Erronea* (*Zoila*?) *teramachii* Kuroda, 1938.

**Remarks:** Subjective synonym of *Nesiocypraea* Azuma & Kuroda, 1967.

*levissima* [*Crossia iutsui*] Raybaudi Massilia 1995a:29, fig. 15. In 300-380 m depth, off Hondeklipbaai, Cape Province, South Africa. Type material presumably in the collection of L. Raybaudi Massilia, Rome, Italy.

**Remarks:** Regarded as a junior synonym of *Cypraeovula* (*Crossia*) *iutsui* (Shikama, 1974).

*lobettiana* [*Zoila* (*Zoila*)] Raybaudi, 1995b:15-17, 10

unnumbered figs. on p. 16-17. From 200 m, Great Australian Bight, South Australia. Holotype in the collection of F. Lobetti Bodoni, Italy, 1 paratype in the collection of L. Raybaudi Massilia, Rome, Italy.

**Remarks:** Regarded as a deep-water junior synonym of *Z. rosselli* Cotton, 1948.

*merguina* [*Mauritia arabica*] Lorenz & Huber, 1993:47-50, pl. 9, figs. 1-8. Mergui Archipelago, Myanmar (= Burma). Holotype HNC 31642, 1 paratype HNC, 3 paratypes in the collection of F. Lorenz, Gießen, Germany, 3 paratypes in the collection of F. Huber, Schwanestadt, Germany.

*onii* [*Notadusta*] Ikeda, 1998:263-266, fig. 2 [radula], pl. 1, figs. 1a-1c. In 100-120 m depth, off Tosashimizu, Kochi Prefecture, Shikoku, Japan (32°46'N, 132°57'E). Holotype NSMT Mo-71297, paratype NSMT Mo-71298.

*oryzaeformis* [*Purpuradusta*] Lorenz & Sterba, 1999:3-6, figs. 5 (radula), 8, pl. 1, figs. 1-3. Raroia, Tuamotu, French Polynesia. Holotype HNC 44694, 1 paratype HNC 44695, 8 paratypes in the collection of F. Lorenz, Gießen, Germany, 1 paratype in the collection of G. Sterba, Markkleeberg, Germany.

*pellisserpentis* [*Cribrarula*] Lorenz, 1999b:37-38, pl. 7, figs. 1-3. 15 to 35 m from an area south of Tuléar to Fort Dauphin, southern, Madagascar. Holotype HNC 52874, 1 paratype in the collection of M. Chiapponi, Lecco, Italy, 1 paratype in the collection of M. Blöcher, Duisberg, Germany, 1 paratype in the collection of J. van Heesvelde, Gent, Belgium, 1 paratype in the collection of L. Gabrielli, Neuss, Germany.

*perdentata* [*Cypraeovula-Luponia amphithales*] Raybaudi, 1995c:68-70, figs. 5-8. Presumably from deep water off Algoa Bay/Port Alfred, Cape Prov., South Africa. Holotype in the collection of Dr. Stimpson, USA.

**Remarks:** Apparent hybrid of *Cypraeovula fuscudentata* (Gray, 1825) and *C. capensis* (Gray, 1828). This taxon is considered a junior synonym of *C. fuscudentata* (Gray, 1825) (see ICZN note on p. 117).

*pseudolutea* [*Palmadusta* (*Palmadusta*)] Ma, 1997:96, 261, pl. 6, fig. 5. Sanya, Hainan Province, China. Holotype IO M36886.

**Remarks:** Junior synonym of *P. (P.) saulae* (Gaskoin,



1843).

*raybaudii* [*Zoila marginata*] Lorenz, 1992.

**Remarks:** A valid subspecies of *Z. marginata* (Gaskoin, 1849) (see *albanyensis* [*Zoila marginata*]). See Groves (1994a) for type material, type locality and original citation.

*sanfrancisco* [*Cypraeovula algoensis*] Chiapponi, 1999:41-42, figs. 1-2. Near Cape St. Francis, Cape Prov., South Africa. Holotype HNC 52875, 3 paratypes in collection of M. Chiapponi, Malgrate, Italy, 2 paratypes in collection of F. Lorenz, Gießen, Germany.

**Remarks:** Possibly a junior synonym of *C. algoensis*.

*sharmiensis* [*Lyncina camelopardalis*] Heiman & Mienis, 1999:41-42, figs. 3-8. Ras Nasrani, near Sharm-el Sheikh, northeastern Red Sea, Egypt. Holotype HUI 31867, paratype HUI 39164, 3 paratypes in the collection of E. Heiman, Rehovot, Israel.

**Remarks:** Junior synonym of *L. camelopardalis* (Perry, 1811).

*sinensis* [*Erosaria (Erosaria)*] Ma, 1997:44-45, 259-260, pl. 6, fig. 1. Chaoyang Guangdong Prov., China. Holotype IO M37222.

**Remarks:** Junior synonym of *E. (E.) erosa* (Linné, 1758).

*sublitoria* [*Erosaria*] Lorenz, 1997:11-13, fig. 2, pl. 5, figs. 5, 10. Viasala, Savai'i, Western Samoa. Holotype HNC 44663, 33 paratypes in collection of F. Lorenz, Gießen, Germany.

**Remarks:** Junior synonym of *E. annulus* (Linné, 1758).

*tenuidon* [*Lyncina leucodon*] Lorenz, 1999a:16-17, pl. 4, figs. 1-2. 200 m, southern Andaman Sea. Holotype HNC 52871, 1 paratype in collection of M. Chiapponi, Lecco, Italy, 1 paratype in collection of L. Gabrielli, Neuss, Germany.

**Remarks:** Junior synonym of *L. leucodon* (Broderip, 1832).

## FOSSIL TAXA

### Family Cypraeidae

*Akleistostoma* Gardner, 1948:213-214. Type species: *Cypraea carolinensis* Conrad, 1841.

**Remarks:** Proposed by Gardner (1948) as a section

within the genus and subgenus *Cypraea* (*Cypraeorbis*) and elevated to subgeneric status by Petuch (1998).

*alligator* [*Siphocypraea*] Petuch, 1994:266, pl. 30, figs. A-B. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 8), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 66225.

**Remarks:** Assigned to the subgenus *Akleistostoma* by Petuch (1998).

*briani* [*Calusacypraea*] Petuch, 1996:18-20, figs. 1-2. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 7), Tamiami Formation. Phase 7 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 68248, 2 paratypes in GMANH, 3 paratypes in collection of E. Petuch (FAU).

**Remarks:** Assigned to the genus/subgenus *Siphocypraea* (*Calusacypraea*) by Petuch (1998).

*bulbus* [*Cypraeorbis*] Garvie, 1996:56-57, pl. 13, figs. 5-6. Early Eocene [lower Claibornian (= early Ypresian)], Marquez Member, Reklaw Formation. Joe Taylor Branch of Two Mile Creek Creek, NE of Gause, Milam County, Texas. Holotype PRI 30371, 1 paratype PRI 30372.

*Calusacypraea* Petuch, 1996:17-18. Type species: *Calusacypraea duerri* Petuch, 1996.

**Remarks:** Originally proposed as full genus and later redesignated by Petuch (1998) to subgenus of *Siphocypraea*.

*cannoni* [*Siphocypraea*] Petuch, 1994:266-267, pl. 27, figs. A-B, I. Late Pliocene (Piacenzian), uppermost Pinecrest beds (Petuch unit 3), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 66221.

*cathyae* [*Zonaria (Pseudozonaria)*] Groves, 1997:154, pl. 1, figs. 9-10. Early Pliocene, Esmeraldas beds, Onzole Formation. Quebrada Camarones, Esmeraldas Province, Ecuador [LACMIP loc. 16944]. Holotype LACMIP 12433.

*chathamensis* [*Bernaya*] Cernohorsky, 1971.

**Remarks:** Cernohorsky (1994) reported that the original label accompanying the holotype of *Bernaya chathamensis* incorrectly dated the specimen as from early Pliocene deposits. It was not realized until recently

that most of the marine Tertiary sequence of the Chatham Islands was of Paleocene to early Eocene age. The aperture of the holotype of *B. chathamensis* is filled with Red Bluff Tuff matrix which is of early Eocene (Waipawan) age (Beu & Maxwell, 1990). See Groves (1994a) for type material, type locality and original citation.

*cowlitziana* [*Nucleolaria*] Groves, 1994b:247-248, figs. 6-7. Middle to upper Eocene ("Tejon Stage") Cowlitz Formation. East of Vader, Lewis County, Washington [UCMP loc. D-8040]. Holotype UCMP 39837.

*crocodila* [*Siphocypraea*] Petuch, 1994:267, pl. 30, figs. J-K. Late Pliocene (Piacenzian), lowermost Pinecrest beds fauna (Petuch unit 10), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 66228.

**Remarks:** Assigned to the subgenus *Akleistostoma* by Petuch (1998).

*diegelae* [*Siphocypraea*] Petuch, 1994:267-268, pl. 32, figs. J-K. Pliocene, Kissimmee beds Tamiami Formation. Kissimmee River dredgings at Okeetantie, Okeechobee, Okeechobee County, Florida. Holotype UF 66232.

**Remarks:** Assigned to the subgenus *Akleistostoma* by Petuch (1998).

*dimasi* [*Siphocypraea* (*Siphocypraea*)] Petuch, 1998:33-34, figs. 19-20. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 3), Tamiami Formation. Florida Rock Industries, Inc., Naples Quarry (= Mule Pen Quarry), Naples, Collier County, Florida. Holotype UF 84987, 1 paratype GMANH, 2 paratypes in collection of E. Petuch (FAU).

*duerri* [*Calusacypraea*] Petuch, 1996:20, figs. 3-4, 10. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 10), Tamiami Formation. Phase 6 pit, Quality Aggregates Inc., Sarasota, Sarasota County, Florida. Holotype UF 68249, 3 paratypes in GMANH, 3 paratypes in collection of E. Petuch (FAU), 1 paratype in collection of R. Duerr, Hollywood, Florida.

**Remarks:** Assigned to the genus/subgenus *Siphocypraea* (*Calusacypraea*) by Petuch (1998).

*emmakingae* [*Zonaria* (*Zonaria*)] Groves, 1994b:246, figs. 2-3. Lower to middle Miocene, Topanga Canyon

Formation. South side of Old Topanga Road, central Santa Monica Mountains, Los Angeles County, California [LACMIP loc. 5136]. Holotype LACMIP 12277.

*eniwetokensis* [*Jenneria* (*Projenneria*)] Dolin, 1996 [1997]:22, 24, figs. 3a-c. Early Miocene (Aquitanian-Burdigalian). Drill hole E-1, Parry Id., Eniwetok Atoll, Ralik Chain, Marshall Ids. Holotype USNM 174971.

*erici* [*Siphocypraea* (*Akleistostoma*)] Petuch, 1998:28-29, figs. 1-3. Late Pliocene (Piacenzian) Pinecrest beds (Petuch unit 10), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 84981, 3 paratypes in GMANH, 3 paratypes in collection of E. Petuch (FAU).

**Remarks:** Possible subspecies of *S. (A.) carolinensis* (Conrad, 1841).

*furoni* [*Cypraea* (*Umbilia*)] Tessier, 1952:380, pl. 35, figs. 1-3, 7. Paleocene. Margot de Balling, Senegal. Type material presumably in the Centre de Documentation du Laboratoire de Paléontologie du Muséum, Marseille, France.

**Remarks:** This taxon was probably overlooked and/or ignored because it was described in a published doctoral dissertation. Not listed in Schilder & Schilder (1971). Currently in the genus *Bernaya*.

*goedertorum* [*Proadusta*] Groves & Squires, 1995:114-115, figs. 2-5. Middle lower Eocene ("Capay Stage"), upper part of the Crescent Formation. Larch Mountain area, Black Hills, Thurston County, Washington [LACMIP loc. 16655]. Holotype LACMIP 12375, 1 paratype LACMIP 12376.

*goettingi* [*Mauritia*] Lorenz, 1999c:57-58, pl. 11. Pliocene. Waso Hills, Tanzania. Holotype HNC53152, 1 paratype in the collection of F. Lorenz, Gießen, Germany, 1 paratype in the collection of K. Götting, Gießen, Germany.

*grovesi* [*Siphocypraea* (*Siphocypraea*)] Petuch, 1998:34, figs. 15-17. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 4), Tamiami Formation. Florida Rock Industries, Inc., Naples Quarry (= Mule Pen Quarry), Naples, Collier County, Florida. Holotype UF 84988, 2 paratypes GMANH, 2 paratypes in collection of E. Petuch (FAU).



*hemmenorum* [*Zonaria*]. Lorenz & Groh, 1998:112, fig. 6 [holotype (left figs.), paratype (right figs)]. Middle Miocene ("Vindobonian"). Northwest of Porto de Cais, near Portinha, Ilheu de Cima, Porto Santo, Madeira Archipelago. Holotype SMF 310 772, 1 paratype in the collection of J. Hemmen, Wiesbaden, Germany, 1 paratype in the collection of F. Lorenz, Gießen, Germany.

*itoigawai* [*Cypraea* (*Zoila*)] Tomida, 1989:93,95, pl. 11, figs. 3a-c, 4a-b. Miocene/Pliocene, Senhata Formation. East side of Okumotona Quarry, Kyonanchô, Awa-gun, Chiba Prefecture, Japan (35°9'20"N, 139°51'20"E). Holotype MFM 110104, paratype MFM 110105.

**Remarks:** Represented by poorly preserved internal molds and should possibly be considered a *nomen dubium*. It is unlikely that *Zoila* existed outside of Australia and southeast Asia (T. Darragh, pers. commun., 1999).

*jacqueti* [*Gisortia*] Tessier, 1952:378, pl. 34, figs. 2-3. Lower middle Eocene (Lutetian). Daffé, Senegal. Type material presumably in the Centre de Documentation du Laboratoire de Paléontologie du Muséum, Marseille, France.

**Remarks:** This taxon was probably overlooked and/or ignored because it was described in a published doctoral dissertation. Not listed in Schilder & Schilder (1971).

*jenniferae* [*Siphocypraea* (*Akleistostoma*)] Petuch, 1998:29, figs. 4-6. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 4), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 84982, 1 paratype in GMANH, 2 paratypes in collection of E. Petuch (FAU).

*josiai* [*Siphocypraea*] Fehse, 1997:39, pl. 13, figs. 4a-5. Lower Pliocene, Pinecrest beds. Clewiston, Hendry County, Florida. Holotype HNC 44659, 1 paratype HNC 44660, 6 paratypes in the collection of D. Fehse, Berlin, Germany.

**Remarks:** Petuch (1998) states that this species is actually from early Pleistocene (Calabrian), Caloosahatche biozone (Petuch unit 1), Okeechoe Formation.

*kalafuti* [*Siphocypraea*] Petuch, 1994:268, pl. 31, figs. G-H, J. Late Pliocene (Piacenzian), upper Pinecrest beds (Petuch unit 4), Tamiami Formation. Phase 7 pit,

Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 66231.

*kelleyi* [*Siphocypraea* (*Calusacypraea*)] Petuch, 1998:33, figs. 13-14. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 3), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 84986, 3 paratypes GMANH, 3 paratypes in collection E. Petuch (FAU).

**Remarks:** Possible subspecies of *S. (C.) briani* Petuch, 1996.

*kendrewi* [*Cypraeorbis*] Petuch, 1997:129, figs. 22-23. Early Oligocene (Latdorfian), Suwannee Formation. Terramar Pit, Polk County, Florida. Holotype UF 75981, 1 paratype in the collection of E. Petuch (FAU).

*ketteri* [*Siphocypraea*] Petuch, 1994:268-269, pl. 31, figs. C-D, I. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 8), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 66229.

**Remarks:** Assigned to the subgenus *Akleistostoma* by Petuch (1998).

*kissimmeensis* [*Siphocypraea*] Petuch, 1994:269, pl. 29, figs. G-H, L. Late Pliocene (Piacenzian), Pinecrest beds, Tamiami Formation. Kissimmee River dredgings, Fort Basinger, Highlands County, Florida. Holotype UF 66224.

**Remarks:** Possible subspecies of *S. transitoria* Olsson & Petit, 1964.

*macbrideae* [*Siphocypraea* (*Akleistostoma*)] Petuch, 1998:29, 32, figs. 9-10. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 4), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 84983, 2 paratypes in GMANH, 1 paratype in collection of E. Petuch (FAU).

*mansfieldi* [*Siphocypraea* (*Akleistostoma*)] Petuch, 1998:32, figs. 7-8. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 7), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 84984, 1 paratype in GMANH, 1 paratype in collection of E. Petuch (FAU).

*marilynae* [*Siphocypraea*] Petuch, 1994:269, pl. 30,

figs. H-I. Late Pliocene (Piacenzian), uppermost Pinecrest beds (Petuch unit 2), Tamiami Formation. Phase 7 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 66227.

**Remarks:** Figured by Falconieri (1994) as *Siphocypraea robbieae* Petuch, 1993, a manuscript name.

*metae* [*Siphocypraea*] Petuch, 1994:269-270, pl. 32, figs. E-F. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 4, = "Black layer"), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 66230.

*ohiroi* [*Cypraea*] Masuda, 1967:6, pl. 1, figs. 28a-b, 29. Miocene, Higashi-Innai Formation. Noto Peninsula, Ishikawa Prefecture, Honshu, Japan [loc 30]. Holotype MUG 4598, 1 paratype MUG 4599.

**Remarks:** Currently in the genus *Lyncina*. Not listed in Schilder & Schilder (1971).

*palmula* [*Luria*]. Lorenz & Groh, 1998:110-111, fig. 4 [holotype]. Middle Miocene ("Helvetian"). "Pico de Juliana auf Porto Santo b. Madeira." Holotype NHB 17548.

*parodizi* [*Siphocypraea*] Petuch, 1994:270, pl. 28, figs. G-H, L. Late Pliocene (Piacenzian), uppermost Pinecrest beds (Petuch unit 3), Tamiami Formation. Phase 6 pit, Quality Aggregates Inc., Sarasota, Sarasota County, Florida. Holotype UF 66223.

**Remarks:** Possible subspecies of *S. cannoni* Petuch, 1994.

*penningtonorum* [*Siphocypraea*] Petuch, 1994:270, pl. 28, figs. E-F, J. Late Pliocene (Piacenzian), Pinecrest beds, Tamiami Formation. Kissimmee River dredgings, Fort Basinger, Highlands County, Florida. Holotype UF 66222.

*philemoni* [*Siphocypraea*] Fehse, 1997:38, pl. 12, figs. 1a-c, pl. 13, figs. 3, 6. Lower Pliocene, Pinecrest beds, Tamiami Formation. Clewiston, Hendry County, Florida. Holotype HNC 44657, 1 paratype NHC 44658, 9 paratypes in collection of D. Fehse, Berlin, Germany. **Remarks:** Petuch (1998) states that this species is actually from early Pleistocene (Calabrian), Upper Caloosahatche biozone, Okeechobee Formation.

*pittorum* [*Zonaria* (*Zonaria*)] Groves, 1997:153-154, pl. 1, figs. 7-8. Lower Pliocene, Esmeraldas beds, Onzole Formation. Camarones, Esmeraldas Province, Ecuador [LACMIP loc. 16882]. Holotype LACMIP 12432.

*Projenneria* Dolin, 1996 [1997]:22. Type species: *Cypraea ludoviciana* Johnson, 1899.

*pygodentata* [*Proadusta*]. Lorenz & Groh, 1998:112-113, fig. 7. Middle Miocene ("Helvetian"). Southeast coast N Portinho, Ilheu de Baixo, Porto Santo, Madeira Archipelago. Holotype SMF 310 774, 1 paratype NHB 17547.

**Remarks:** Currently in the genus *Propustularia*.

*rilkoi* [*Siphocypraea* (*Akleistostoma*)] Petuch, 1998:32-33, figs. 11-12. Late Pliocene (Piacenzian), Pinecrest beds (Petuch Unit 3), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 84985, 3 paratypes GMANH, 2 paratypes in collection of E. Petuch (FAU).

*santoensis* [*Luria*]. Lorenz & Groh, 1998:110, fig. 3. Middle Miocene. Northwest of Porto do Cais, southwest coast of Porto Santo, Ilheu de Cima, Madeira Archipelago. Holotype SMF 310 773.

*sarasotaensis* [*Siphocypraea*] Petuch, 1994:271, pl. 30, figs. C-D. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 6), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 66226.

**Remarks:** Assigned to the subgenus *Calusacypraea* by Petuch (1998).

*sorrira* [*Zonaria*]. Lorenz & Groh, 1998:111, fig. 5. Middle Miocene. Southeast coast No. Portinho, Ilheu de Baixo, Porto Santo, Madeira Archipelago. Holotype SMF 310 771, 1 paratype in collection of J. Hemmen, Wiesbaden, Germany.

*tequesta* [*Calusacypraea*] Petuch, 1996: 20-21, figs. 7-8. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 4), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 68250, 1 paratype in GMANH, 2 paratypes in collection of E. Petuch, (FAU).

**Remarks:** Assigned to the genus/subgenus *Siphocypraea* (*Calusacypraea*) by Petuch (1998).



## Family Ovulidae, Subfamily Eocypraeinae

*elongata* [*Eocypraea bartlettiana* Maury var.] Tessier, 1952:379, pl. 32, figs. 25-26. Paleocene. Margiot de Balling, Senegal. Type material presumably in the Centre de Documentation du Laboratoire de Paléontologie du Muséum, Marseille, France.

**Remarks:** This taxon was probably overlooked and/or ignored because it was described in a published doctoral dissertation. Not listed in Schilder & Schilder (1971).

## REFERENCES

- BEU, A.G. & P.A. MAXWELL. 1990. Cenozoic Mollusca of New Zealand. New Zealand Geological Survey, Paleontological Survey Bulletin 58:1-518, figs. 1-23, pls. 1-57.
- BIRAGHI, G. 1993. *Zoila marginata* (Cypraeidae): Notes on the nominal subspecies with the creation of a new subspecies. La Conchiglia 25(266):39-42, 5 unnumbered figs.
- BIRAGHI, G. 1994. Again on *C. marginata*. La Conchiglia 26(271):52-54, figs. 1-5.
- BLOCHER, M. & F. LORENZ. 1999. A new living species of Cypraeidae from southern Madagascar (Mollusca: Gastropoda: Cypraeidae). Schriften zur Malakozoologie 13:13-15, fig. 1, pl. 3.
- CERNOHORSKY, W.O. 1971. Fossil and Recent Cypraeacea (Mollusca: Gastropoda) of New Zealand with descriptions of new species. Records of the Auckland Institute and Museum 8:103-129, figs. 1-19.
- CERNOHORSKY, W.O. 1994. Age of *Bernaya chathamensis*. The Cowry n.s. 1(2):42.
- CHANDLER, J. & C. DUROSS. 1997. A new *Zoila* discovered. World Shells 20:65-67, 21 unnumbered figs.
- CHIAPPONI, M. 1999. A conchological intermediate between *Cypraeovula edentula* and *C. algoensis* (Mollusca: Gastropoda: Cypraeidae). Schriften zur Malakozoologie 13:41-42, figs. 1-2.
- DOLIN, L. 1996 [1997]. *Jenneria* (*Projenneria*) *eniwetokensis* subgen. nov., sp. nov.: a western Pacific new occurrence for the genus. Cossmanniana 4(1-2):20-24, figs. 1-10b.
- FALCONIERI, A. 1994. Genus *Siphocypraea* Heilprin, 1887. World Shells 11:83-90, 2 unnumbered pls.
- FEHSE, D. 1997. Two new fossil *Siphocypraea* from Florida, U.S.A. Schriften zur Malakozoologie 10:38-44, pls. 12-13.
- GARDNER, J. 1948. Mollusca from the Miocene and lower Pliocene of Virginia and North Carolina. Part 2. Scaphopoda and Gastropoda. U.S. Geological Professional Paper 199B: iii + 179-310, pls. 24-38.
- GARVIE, C.L. 1996. The molluscan macrofauna of the Reklaw Formation, Marquez Member (Eocene: Lower Claibornina), in Texas. Bulletins of American Paleontology 111(352):1-177, figs. 1-6, pls. 1-23.
- GROVES, L.T. 1994a. Catalog of fossil and Recent Cypraeidae and Eocypraeinae (Ovulidae) described since 1971, The Cowry n.s. 1(1):5-16.
- GROVES, L.T. 1994b. New species of Cypraeidae (Mollusca: Gastropoda) from the Miocene of California and the Eocene of Washington. The Veliger 37(3):244-252, figs. 1-13.
- GROVES, L.T. 1997. A review of cypraeiform gastropods from Neogene strata of northwestern Ecuador with the description of two new species. Tulane Studies in Geology and Paleontology 30(3):147-157, fig. 1, pl. 1.
- GROVES, L.T. & R.L. SQUIRES. 1995. First report of the genus *Proadusta* Sacco, 1894 (Gastropoda: Cypraeidae) from the western hemisphere, with a description of a new species from the Eocene of Washington. The Nautilus 109(1): 113-116, figs. 1-6.
- HEIMAN, E. & H.K. MIENIS. 1999. *Lyncina camelopardalis sharmiensis* n.ssp. from the east coast of Sinai, Red Sea (Gastropoda: Prosobranchia: Cypraeidae: Cypraeinae). La Conchiglia 30(290):39-42, 56, figs. 1-8.
- IKEDA, H. 1998. *Notadusta omii*, a new cowry (Gastropoda: Cypraeidae), from Japan with a review of *Notadusta katsuae* and *N. musumea*. Venus 57(4):259-269, figs. 1-3, pl. 1.
- LORENZ, F., Jr. 1992. A new subspecies of *Zoila marginata* (Gastropoda: Cypraeidae). Schriften zur Malakozoologie 5:13-18, fig. 1, pls. 4-5.
- LORENZ, F., Jr. 1997. A new subspecies of *Cribrarula cribraria* from Sri Lanka (Gastropoda: Cypraeidae). Schriften zur Malakozoologie 10:1-3, pl. 1.
- LORENZ, F., Jr. 1997. Eine neue, der ringkauri *Erosaria annulus* morphologisch ähnliche art von West Samoa. Schriften zur Malakozoologie 10:11-14, figs. 1-2, pl. 5.
- LORENZ, F. 1998. Kauris von Ostafrika. Schriften zur Malakozoologie 11:1-150, figs. 1-121, pls. 1-26.
- LORENZ, F. 1999a. A western subspecies of *Lyncina leucodon* (Broderip, 1832) (Mollusca: Gastropoda: Cypraeidae). Schriften zur Malakozoologie 13:16-18, pl. 4.
- LORENZ, F. 1999b. Another new species of Cypraeidae from Madagascar (Mollusca: Gastropoda: Cypraeidae). Schriften zur Malakozoologie 13:37-40, pl. 8.
- LORENZ, F. 1999c. Eine Pliozäne *Mauritia* aus Tansania (Gastropoda: Cypraeidae). Schriften zur Malakozoologie 13:57-59, pl. 11.
- LORENZ, F. Jr. & K. GROH. 1998. Five new species of Cypraeidae from the middle Miocene ("Vindobonian") of Porto Santa, Madeira Archipelago. Archiv für Molluskenkunde 127(1/2):107-114, figs. 1-7.
- LORENZ, F., Jr. & F. HUBER. 1993. A new subspecies of *Mauritia arabica* from Birma [sic] (Gastropoda: Cypraeidae). Schriften zur Malakozoologie 6:47-50, fig. 1, pl. 9.
- LORENZ, F., Jr. & A. HUBERT. 1993. A Guide to Worldwide Cowries. Verlag Christa Hemmen: Wiesbaden, Germany. 571 p., 53 figs. + numerous unnumbered figs., 122 pls.
- LORENZ, F. & G. STERBA. 1999. *Purpuradusta oryzaeformis* sp. nov. (Mollusca: Gastropoda: Cypraeidae): An overlooked species in the family Cypraeidae. Schriften zur Malakozoologie 13:3-8, figs. 1-9, pl. 1.
- MA, X. 1997. Fauna Sinica: Superfamily Cypraeacea. Science Press: Beijing, China. viii + 283 p., 96 figs., 12 pls.
- MASSIER, W. 1993. Description of a new subspecies of *Cypraeovula capensis* (Gray, 1828) (Gastropoda: Cypraeidae). Schriften zur Malakozoologie 6:21-26, fig. 1, pl. 5.
- MASUDA, K. 1967. Molluscan fauna of the Higashi-Innai Formation of Noto Peninsula, Japan-III; Description of new species and remarks on some species. Transactions and Proceedings of the Palaeontological Society of Japan (N.S.) 65:1-18, pls. 1-2.
- MOCK, D.K.S. 1996. A new species of *Erronea* from the Philippine. World Shells 18:63-66, figs. 1-10.
- PETUCH, E.J. 1994. Atlas of Florida Fossil Shells. The Graves Museum of Archaeology and Natural History: Sarasota, Florida. xii + 394 p., 20 figs., 100 pls.
- PETUCH, E.J. 1996. *Calusacypraea*, a new, possibly neotenic genus of cowries (Gastropoda: Cypraeidae) from the Pliocene of southern Florida. The Nautilus 110(1):17-21, figs. 1-11.

- PETUCH, E.J. 1997. A new gastropod fauna from an Oligocene back-reef lagoonal environment in west central Florida. *The Nautilus* 110(4):122-138, figs. 1-72.
- PETUCH, E.J. 1998. New cowries from the Myakka Lagoon System and the Everglades Pseudoatoll (Pliocene, Okeechobean Sea). *La Conchiglia* 30(288):27-37, figs. 1-17.
- POPPE, G. & P. MARTIN. 1997. A new species of *Pustularia* from the Philippines (Gastropoda: Cypraeidae). *Gloria Maris* 35(6):81-88, pls. 1-2.
- RAYBAUDI MASSILIA, L. 1978. *Cypraea (Zoila) marginata* Gaskoin, 1849. *La Conchiglia* 10(106-107):11-14, figs. 1-10, + card 2 + cover.
- RAYBAUDI MASSILIA, L. 1985. Cypraeidae: Catalogo specializzato delle cipree. *Connoisseur of Seashells* 1:3-9, numerous figs.
- RAYBAUDI MASSILIA, L. 1993a-b--1994a-c. *Zoila (Zoila) marginata* (Gaskoin, 1849). I. Revision of the species and the subspecies. *World Shells* 6:3-14, figs. 1-47, pls. A-B [1993a]; II. 7:3-14, figs. 48-71 [1993b]; III. 8:16-24, figs. 72-96, pls. 1-3 [1994a]; IV. 9:19-24, figs. 97-114 [1994b]; V. 10:36-42, figs. 115-128 [1994c].
- RAYBAUDI MASSILIA, L. 1993c. Once again on the holotype of *Zoila (Zoila) marginata*. *World Shells* 7:95-96, 8 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1994d. *Cypraeovula - Luponia amphithales* (Melvill, 1888) and his problems. *World Shells* 11:9-13, figs. 1-13.
- RAYBAUDI MASSILIA, L. 1995a. *Crossia iutsui* Shikama, 1974. Revision of Raybaudi index card no. 44 (1988). *World Shells* 12:17, 24-29, figs. 1-16.
- RAYBAUDI MASSILIA, L. 1995b. *Zoila (Zoila) lobettiana* nova species. *World Shells* 13:15-17, 15 unnumbered figs.
- RAYBAUDI MASSILIA, L. 1995c. Two new great rarities among South African endemics. *World Shells* 14:68-72, figs. 1-19.
- SCHILDER, M. & F.A. SCHILDER. 1971. A catalogue of fossil and Recent cowries. Institut Royal des Sciences Naturelles de Belgique *Mémoire* 85:1-246.
- SHIKAMA, T. 1971. On a new cowry from South China Sea. *Science Report of the Yokosuka City Museum* 18::101-103, fig. 1.
- TESSIER, F. 1952. Contributions à la stratigraphie et à la paléontologie de la partie ouest du Sénégal (Crétacé et Tertiaire). Université d'Aix-Marseille, France. 1:1-269, pls. 1-14; 2:273-569, pls. 15-40.
- TOMIDA, S. 1989. Fossil molluscan assemblage from the Neogene Senhata Formation around Nokogiriyama, Boso Peninsula, Japan. *Bulletin of the Mizunami Fossil Museum* 16:85-108, figs. 1-2, pls. 10-19.
- WILSON, B. 1993. *Australian Shells*, v. 1. Odyssey Publishing: Perth, Western Australia. 408 pp., numerous unnumbered figs., 44 pls.
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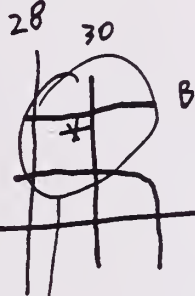
Terry & Marty Arnold  
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I-5

I-805

I-15



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Come to "Munchie Madness"  
Saturday, September 16<sup>th</sup>  
6 P.M. — ?

[Bring your "munchie" to serve 12  
and any necessary serving utensil.]

28 TH

30 TH

2975 B

B ST



ALLEY

C ST



BROADWAY

28 TH ST  
EXIT

SR-94

30 ST EXIT

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WEST







# THE FESTIVUS

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Meeting date: third Thursday, 7:30 PM,  
Room 104, Casa Del Prado, Balboa Park, San Diego

## COME TO "MUNCHIE MADNESS"

The Club's annual September party — "Munchie Madness" — will again be held at the home and garden of Marty and Terry Arnold on Saturday evening September 16<sup>th</sup> with festivities beginning at 6:00 p.m.

There will be no regular meeting this month.

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## CLUB NEWS

### Minutes of the San Diego Shell Club Meeting - August 17, 2000

In President Mike Mason's absence, Vice President Kim Hutsell called the meeting to order. The minutes of the July meeting were approved as written in the *Festivus*. Kim reminded everyone that the September Party will be on September 16 at the Arnold's house. [See map in August issue.]

Librarian Linda Hutsell had various flyers and newsletters for members to look at. She also announced that the new Chiton and Bivalve books are available to be checked out.

Carole Hertz mentioned that the Club has received a donation from the collection of Gladys Weber. Items from the collection will be in the next Auction.

Kim introduced Hans Bertsch as the speaker for the evening. Hans spoke about the marine research grant he received from México and his recent trips to Guerrero Negro, Bahía Tortugas and Isla Cedros to collect the data. His work focused on nudibranchs but there are many other types of organisms found in the area. He discovered many range extensions, most of which were found in Bahía Tortugas.

There is a biosphere reserve as well as a salt processing plant in this area. The area is about one-half way down the coast and much of it is dirt road. He commented that the abalone cooperatives there are doing very well.

The winner of the shell drawing was John Bishop. The meeting was adjourned at 8:40 p.m. with a motion by Carole and second by Kim. Thank you to Mike Mason, Dave and Peg Mulliner, and John Bishop for the delicious refreshments.

Silvana Vollero

### A Change in Some Subscription Rates

As a result of postal increases for overseas surface mail, *The Festivus* is forced to increase the membership/subscription rate for overseas surface mail subscribers from \$18 to \$20 beginning in 2001. All other membership rates will remain the same. See front page for other membership information.

### Molluscs 2000 Meeting in Sydney, Australia

The Molluscs 2000 meeting in Sydney, Australia "Understanding Molluscan Biodiversity in our Region into the 21<sup>st</sup> Century" will be held on the 4<sup>th</sup> - 8<sup>th</sup> December, 2000.

Three main symposia are planned: 1) Describing Molluscan Biodiversity - taxonomy and phylogeny and their role in biodiversity studies 2) Assessing Molluscan Biodiversity - ecology, life history and genetics 3) Humans and Molluscan Biodiversity - impacts, commercial utilization, pests and diseases.

Information is now available on the Malacological Society of Australasia's website (<http://www.austmus.gov.au/malsoc/>) including registration forms and abstract formatting details.

Payment can be made by credit card. Abstracts are due by the 30<sup>th</sup> October. A late fee for registrations of \$Aust 22.00 will be imposed after the 15<sup>th</sup> of October.

Hard copy or e-mail versions of the registration forms and other details will be sent on request.

### International Shellfish Conference

The Fourth International Shellfish Conference will be held from November 15-19, 2000 at the Crown Plaza Resort, Hilton Head Island, South Carolina. The focus will be the restoration of molluscan shellfish and their habitat

For further information see the website at: <<http://www.scseagrant.org>>.

### The Club's Annual Christmas Dinner Party

The Club Christmas Party will be held on Saturday evening December 2<sup>nd</sup> with festivities beginning at 6:00 p.m. This year the event will be held at the Admiral Kidd Club. Details, menus etc. will be in the October issue with a map to the Club in the November issue.

Save the date. This is always a very special event.

### Membership Renewal

Lindahl, Marge and Ken, 202 Grand Canal, Balboa Island, CA 92662. Phone: 714-675-5858.



KATHERINE "KATE" STEPHENS  
(c. 1853-1954)

GINGER DETHLOFF<sup>1</sup>

San Diego Natural History Museum, Research Library,  
P.O. Box 1390, San Diego, California 92112, USA  
blueginger@home.com

Katherine "Kate" Stephens (née Brown) (Figure 1) was a nationally recognized naturalist and amateur paleontologist who served as Curator of Collections for the San Diego Society of Natural History and in 1920 became the first paid curator of the Department of Mollusks & Marine Invertebrates at the San Diego Natural History Museum (SDNHM Collection Management Handbook, 1994).

Born in England, Kate's interest in natural history was cultivated by frequent visits to the museums of London. She worked for a time at the British Museum of Natural History, and in 1890 she left England to live with her cousin in San Diego County. She settled in the small town of Witch Creek (between Ramona and Julian) where she began teaching school. It was also at this time that her interest was sparked in the shells of San Diego. She collected and studied both terrestrial and marine mollusks of the San Diego region and was regarded as a resident authority on the subject. In 1907 she took part in a University of California expedition to Alaska. Many lots of Alaskan mollusks in the Museum collection resulted from Kate's work there.

In August 1898, Kate married Frank Stephens with whom she shared a great interest in natural history. In the early 1900s, Frank was an active member of the San Diego Society of Natural History, an ornithologist and an accomplished Pacific Coast mammalogist. In 1910, the Society hired Kate as curator for its collections, wherein she assumed responsibility for the care and conservation of specimens including those from her husband's mammal collection. She remained diligent in her duties and in October 1923 she completed a comprehensive overhaul of the Museum's large collection of shells. For eleven years, Kate and Frank



Figure 1. Mrs. Kathryn "Kate" Brown Stephens in her later years. Photograph from the SDNHM Research Library Archives.

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<sup>1</sup>Intern at SDNHM Research Library (while a graduate student at the University of San Diego).

collaborated to create original museum exhibits and together they did much of the work expanding and caring for the collections.

From 1924-1928 Kate worked to identify the fossil shells of San Diego County in connection with the paleontological study conducted by the Society with U.S. Grant IV and Frank Stephens. [See Frank Stephens, (1929) Notes on the Marine Pleistocene Deposits of San Diego County, California. Transactions of the San Diego Society of Natural History 5(16): 245-256 (5 August).] In May of 1925, she prepared an exhibit of the Chaney collection of very small shells collected near San Diego; in June she prepared a sponge exhibit with local specimens and in December, rearranged the gorgonian "Sea Fan" exhibit. In 1927 and 1928 Kate updated the Museum's collections by re-labeling specimens to correspond with the new nomenclature in addition to preparing "an exhibit on ammonites or fossil shells of the Chambered Nautilus group."

Excerpts from Kate's contributions to the Annual Reports of San Diego Society of Natural History from 1923 to 1926 give a view of collection curation at the time, the work and growth of the collections in her care, and a glimpse of Kate Stephens as an environmentally forward looking individual.

"1923 has been a year of steady progress, both in material and interest. Several donations have been received, of which one is a small collection of shells from Brazil, gathered in 1865 by the late Orestes St. John, one of the early Government Paleontologists. Mrs. Carrie L. Simons, a member of the San Diego Society of Natural History, has increased her donations of beautifully mounted microscopic shells from Lower California, including one new species, *Amphithalamus* [sic] *stephensae* [Figure 2].

We also received a very valuable collection of 120 specimens of the interesting genus *Oreohelix* from Mr. Junius Henderson of the University of Colorado. These shells are particularly desirable, as they complement the already large collection of *Oreohelix* given to us by Mr. Hemphill, the original student of these peculiar snails. Mr. Henderson's specimens were in exchange for Eocene fossils from Rose Canyon, San Diego ....

The most pressing need at the present



Figure 2. *Amphithalamus stephensae* Bartsch, 1927. Holotype, 1.1 mm. Type locality: Bahía Magdalena, Baja California, Sur, México. Illustration from the Proceedings of the United States National Museum 70(11): pl. 4, fig. 5. Paratypes are in the San Diego Natural History Museum mollusk type collection.

time is cabinets for the card catalogues of this department. The catalogues, numbering many thousand cards, are at present contained in temporary boxes, where they are in danger of being lost or destroyed.

I would recommend that, during the coming year, more attention be given to other branches of invertebrates, particularly to fish parasites and lower crustaceans generally. Owing to the enthusiastic co-operation of Mr. Gillette, the Museum's Preparator, who is preserving such specimens of these orders as are received in his department, this branch can now be profitably studied and would provide results of great economic value. It is also desirable that the littoral fauna of Lower California should receive more intense collecting than heretofore. Much valuable work can be done in this field."

1924 "has on the whole been progressive. Much time has been given to routine work. Some cases in the exhibition hall have been renovated, some rebuilt, and one new case of corals has been installed. The public has shown an increasing interest in the exhibits and in the study of sea life, as compared with past years. About 300 shells were identified for one visitor from the east, and about 200 for another; and a number of other persons have had shells identified and instruction given them.

The Society has received several donations—two or three of considerable interest. One of them, a donation from C.A. Pinkham, of Los Angeles, is a collection of remarkably fine fossils from Coyote Mountain,



including several specimens that are new to our collection, in addition to those not yet identified. A few shells were received from the estate of the late Orestes St. John, and a collection of interesting shells, chiefly foreign and new to the Society, from the late Dr. J.P. Iddings. Mr. and Mrs. F.D. Cleveland, of Altadena, through whose kindness these shells were given, also donated a collection of corals. These are not yet installed.

The chief work of this department, however, has been the commencement of a systematic study of the paleontology of San Diego County. This promises to be very instructive, but has not as yet progressed far enough to give definite results. Hitherto little work has been done in this field since the early days of Cooper, Stanton, Fairbanks and others. If possible, this work should be extended into Lower California in the coming year."

1925 "has been one of steady growth in the department of Mollusks and Marine Invertebrates, although no great or particularly valuable gifts have been received. A new exhibit of sponges has been installed, of which the central feature is a large sponge from Lower California waters donated by Mrs. B. Rashin. An additional case of corals has also been installed, and the case of gorgonias has been rearranged and card-catalogued. Through Mrs. Clara C. Seaver a collection of shells from the estate of the late Mrs. E.M. Chaney of La Jolla was received by the Museum. This accession made possible the installation of a case of very small shells which were arranged on 140 small black disks and provide a rather striking exhibit. There is material on hand for an additional case of crustacea.

After the routine work of identifying specimens for students and bringing the catalogues up-to-date, the chief work of the year has been with fossil shells. A considerable number of local fossils has been collected by Mr. Stephens, many of which have been identified and a number of species new to the collection listed. A great many specimens have also been named for Mr. Charles H. Sternberg. So much study and preliminary cataloguing of fossils has been done that I feel I am now

familiar enough with our local fossils to speak with some confidence about them.

I wish to speak very earnestly on the subject of imported mollusks. Four species of imported mollusks have been allowed to enter California. One, *Vivipara annulata*, has been acclimated several years. Nevertheless, in Japan and China this species is a great pest in the rice fields. If it should get started in the rice fields in Sacramento Valley, it probably would be as great a pest there. Another shell, *Planorbis corneus*, a European species, has been imported for the purpose of cleaning moss that grows on the glass inside aquariums. We have a native species that will do the work just as well, which can be picked up in almost any pond or stream. Another species, *Helix lactea* [*Otala lactea*], a European species, was through the promptness of the Horticultural Commissioner immediately destroyed. I cannot speak too strongly as to the possible danger of these importations. Surely the loss, annoyance and expense to which the Country has been subjected in the introduction of *Helix pisana* at La Jolla should be sufficient reason for caution."

1926 "The Department of Mollusks and Marine Invertebrates is in satisfactory condition. Much work has been done in identifying, mounting and labeling the Eocene and other fossils. Several hundred sets of these fossils have been placed in order and catalogued and are now available for study.

An earnest class of students of shells meets every Friday in my room, and another class meets at intervals. Many visitors bring shells for identification.

Dr. Fred Baker has given to the Society about 150 species of Hawaiian shells, most of which are new to the Society's collections. Several small donations from others have been received from time to time. As heretofore I would urge the collecting of Lower California marine fauna. This would coordinate with the Society's already large collections from California and would make our collections compare with the best on the east coast. A small collection of shells picked up last spring on the Gulf of California at San Felipe by Mr.



Abbott and Mrs. May Canfield gives an indication of the rich field that can be worked there.

A rare crab (*Uca monolifera*) from the Gulf of California, donated by Griffing Bancroft, was new to the Society's collection. A.W. Galloway has taken up the task of collecting isopods for the Society and we have hopes of great help from him.

A noteworthy happening this year is the finding for the first time of fresh water crawfish in San Diego County. A specimen taken August 13 in a pool in the Escondido River at Escondido was given to the Society by Frank Gander, of the O'Rourke Zoological Institute. Another specimen of the same species, donated by Philip C. Barney, was found by him on September 26 in the head of

Spooks Canyon, about five miles from Rancho Santa Fe. I have not yet identified the specimens, but Dr. Myrtle Johnson, of the San Diego State College, and Samuel Harter, of our own Society, have donated material for comparison toward that end."

Kate traveled with her husband Frank on many, if not all, of his collecting trips after they were married. Due to Frank's poor hearing and reputation as a careless driver, Kate forbade her husband to make collecting trips alone. During the trips she would assist as his secretary recording their travels and specimen collections (Figure 3).

Excerpts quoted from Kate's diary in May 1902 tell a bit of what it was like to go on a scientific collecting trip [starting in Witch Creek in San Diego County] in those early days.



Figure 3. Kate at the campsite on a collecting trip. Photograph from the SDNHM Research Library Archives.



"May 5—Started this morning for a four months collecting trip for the Biological Survey Department of Agriculture. A fine day, got off without mishap about half past nine. Our party consisting of myself, three horses—George, Dick and Flora, the little dog Bobs, Carl Field the cook and teamster, and Mr. Stephens our head, called in the official papers "Field Specialist", but to us our leader and our sole dependence for we are as helpless as sheep in everything pertaining to camping out and hunting. Our [turn out] looked uncommonly fine our wagon with its new coat of black and yellow paint and brand new white duck cover. While Carl came gaily behind dragging poor little Bobs with a string tied round his neck. A short visit to the courthouse and many good byes and good luck as we are really off our faces headed north we travel the main road. Dick our new horse has lived in a pasture for several months and is trying now to out travel all and everything. Mr. Stephens has to try to hold him in all the time tho the horse does not act bad at all, only very eager to go. And Flora who is in the wagon with him is an old horse whom we only expect to play third fiddle anyway. In the afternoon we twice see a kangaroo rat dead in the road. A man stoped and gave us a paper in which I see that Queen Willemina is likely to die and a bad battle with the Moros in Mindano. We did not go to Delmar [Del Mar] thinking the main road north might be the best road. There is just a few Torrey Pines to be seen on the top of the bluffs after leaving Soronta [Sorrento] on the left-hand side of the road. (The Torrey Pine grows on one of the Pacific Coast Islands and from La Jolla is about 20 miles north of Delmar. Being one of the most restricted species of trees known.) I may as well say here that these Torrey Pines are a species found nowhere but on the California Coast. They are not a handsome tree as most pines, as living on the top of bluffs close to the ocean the wind beats against them and contorts their branches and head till they look skrubby trees. They are also very difficult to raise from seed so that it is quite likely that in a few years they will be extinct. Late in the afternoon we were caught in a great swarm of starving mosquitos. They

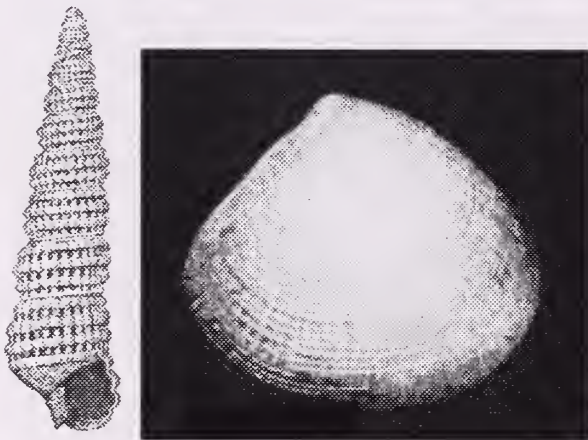
made a great meal off us and the horses. These mosquitos are very large; they must be twice as large as the ordinary kind that come in the houses. They flew around till we went to bed. Set out a few traps. Traveled 22 miles."

"May 7—All day driving through Santa Margarita Ranch we were told there is 10,000 cattle on the Ranch and we are not yet out of San Diego County tho I believe very nearly. We still see many black birds. The grasshoppers will be bad this year for there is a great number of half-grown ones now and we saw many hawks feeding on them. This morning we passed San Onofre. Here there is a large walnut orchard. The trees are apparently only lately set out there must be several acres, a somewhat sandy place. At noon we came to the ocean a nice sandy beach with round boulders at near low tide had a few minutes collecting. I think it would have been profitable to have had a good hunt there. I have collected nothing but a few beetles which I saw eating the wild convulvus [convolvulus, a genus of morning glories]. Cockchaffers [any kind of scarab beetle] seem to be plentiful, there is four or five on and around my book as I write. After camping we were turned off our place by the caretaker as we had camped near to where the cattle come to drink and we have to camp now at a regular camp ground, which is never quite so nice as being alone. There is one wagon and two bicyclers here tonight. Here we have our bed clothes filled with stickers and we see a goffer come to the surface of his hole. It seems quite unheed the light of the lanthorns and we try to trap it but it filled the trap with dirt and after awhile something frightened it and it went down not to come up again. This place is called San Mateo Creek. We can hear Sea Lions roaring and hope to catch a glimpse of them tomorrow. We also hear that there is deer to be found in the mountains round. Frank has set traps tonight for mice and shrews. Traveled 16 miles."

In addition to cataloguing numerous collections and preparing many exhibits, Kate also taught natural history to the local children of San Diego. Students who were given their first taste of natural history by

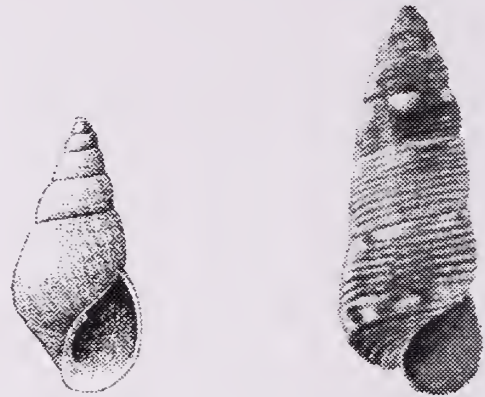
Kate Stephens included Laurence M. Huey, who later became the Museum's Curator of Birds and Mammals, as well as Carl L. Hubbs. Dr. Hubbs became a world-class ichthyologist and biology professor at Scripps Institution of Oceanography, in addition to a Trustee for the San Diego Society of Natural History.

In honor of Kate's contributions, five molluscan species were named for her — *Amphithalamus stephensae* Bartsch, 1927 (Figure 2); *Cerithiopsis stephensae* Bartsch, 1909 (Figure 4); *Gafrarium stephensae* Jordan, 1936 (Figure 5); *Odostomia stephensi* Dall & Bartsch, 1907 (Figure 6) and *Rissoina stephensae* Baker, Hanna & Strong, 1930 (Figure 7).



Figures 4, 5. (4) *Cerithiopsis stephensae* Bartsch, 1909. Holotype, 9 mm. Type locality: Port Frederick, Chichagoff Is., Alaska. Photo from Proceedings of the United States National Museum 37(1711):399. Paratypes are in the San Diego Natural History Museum mollusk type collection. Originally the species name was *stephensi*, but since it was named for Kate, the species was later emended to *stephensae*. (5) *Gafrarium stephensae* Jordan, 1936. Holotype, 5.8 mm. Type locality: Bahía Magdalena, Baja California Sur, México. Photo from Contributions from the Department of Geology of Stanford University 1(4): pl. 19, fig. 11. Now considered a synonym of *Gouldia californica* Dall, 1917.

In 1936, after 30 years of service to the museum, Kate retired from her curatorial position. In all, she served as the Society's Curator of Collections, Assistant Director, Secretary, Librarian, and as Curator of Mollusks and Marine Invertebrates. The Natural History Museum Bulletin, No. 111 (February 1936) claimed that "In fact, it can be truly said that were it not for the devotion of Mrs. Stephens and her husband, Frank Stephens, there may be no Natural History Museum in San Diego today."



Figures 6, 7. (6) *Odostomia stephensi* Dall & Bartsch, 1909. Holotype, 5.3 mm. Type locality: Bear Bay, Baranoff Island, Alaska. Illustration from Bulletin of the United States National Museum 68, pl. 24, fig. 5. The species was named for Kate even though the species is *stephensi*. It is now considered a synonym of *O. tenuisculpta* Carpenter, 1864. (7) *Rissoina stephensae* Baker, Hanna & Strong, 1930. Holotype, 4 mm. Type locality: Cabo San Lucas, Baja California Sur, México. Illustration from Proceedings of the California Academy of Sciences, 4<sup>th</sup> ser., 19(4): pl. 1, fig. 4. Paratypes are in the San Diego Natural History Museum mollusk type collection.

Kate once claimed that "Frank taught me all I know of Natural History as a science." In her own right, she possessed a considerable knowledge of general natural history with a focus on marine invertebrates. Kate was fully acquainted with living mollusks, both marine and non-marine and developed an expertise in the fossil field, not only of mollusks but also of invertebrate paleontology in general. Although retired, Kate remained active in her conchology research well into her 90<sup>th</sup> year. Over 100 years old at the time of her death, she was the Society's oldest living member both in years and length of membership. The personal collections of Kate and Frank Stephens were donated to the museum posthumously in 1955.

#### ACKNOWLEDGMENTS

I would like to thank Margaret Dykens, Scientific Librarian at the Museum's Research Library and Archives, for her assistance on this project. This article originated as a biography of Kate Stephens for the San Diego Natural History Museum's website and was modified for publication in *The Festivus* by Carole M. Hertz, Associate in the Department of Marine Invertebrates.



## REPORT OF THE COMBINED AMS/WSM MEETING

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The 66<sup>th</sup> American Malacological Society (AMS) and 33<sup>rd</sup> Western Society of Malacologists (WSM) Joint Congress entitled "Crawling Towards the New Millennium" was held July 7-12 at San Francisco State University, San Francisco, California. There were approximately 100 people in attendance. There were social events and field trips in addition to two symposia, general sessions, and a poster session. The meeting opened with registration and a Welcoming Reception. on the 7<sup>th</sup>.

The symposium, "The Place of Malacology in Comparative Biology," was convened by Michael Ghiselin on the 8<sup>th</sup> and its papers filled the entire day. Many of them were historical reviews by noted experts in their fields and were philosophical in nature. The one I found outstanding was "Chemical Defense in Opisthobranchs: From Comparative Chemistry to Comparative Biology" by Guido Cimino *et al.* He summarized 20 years of work including current projects being conducted worldwide. He stated that, "Now it is possible, knowing the chemical structure of a compound present in the extract of an unknown opisthobranch, to suggest the order, and sometimes even the family or the genus of the mollusc .... Chemical compounds present in molluscs can be derived from their habitual diet. The chemistry of opisthobranchs is very often the chemistry of sponges, algae, soft corals, tunicates and so on. However, not all secondary metabolites from opisthobranchs have a dietary origin. In fact, some species are able to modify dietary metabolites whereas others are able to biosynthesize de novo their chemical arsenal."

On the following day, Ángel Valdés convened the second symposium, "Systematics and Ecology of Opisthobranch Gastropods." A very interesting paper in the Symposium by Cynthia Trowbridge was entitled



Figure 1. David R. Lindberg presenting his paper.

"Changes in Host-plant Use of Ascoglossan (= Sacoglossan) Sea Slugs on Introduced Macroalgae." She found that the sea slug *Elysia viridis* on Scottish shores preferred to associate with and consume the introduced green macroalgae *Codium fragile* rather than the native alga. Recently metamorphosed juvenile *E. viridis* (from *Codium fragile*-feeding parents) were generally not able to feed or grow on the native alga.

In a General Session that afternoon, I was fascinated by a paper by Erika Iyengar entitled "Kleptoparasitism by the Marine Snail *Trichotropis cancellata* on Tubiferous Marine Polychaete Worms." She showed slides of the snails astride the tube-dwelling

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polychaete worms using their proboscis to steal food from the worms while the worms were in the act of suspension feeding. She concluded that *Trichotropis cancellata* is a facultative kleptoparasite and her field work indicates that this is the dominant feeding mode of this snail. A second paper I found controversial and thought-provoking was David Lindberg's "An Introduction to the Patellogastropoda of the Northeastern Pacific, or Forget (almost) Every Binomial Name You Ever Learned for This Group." Lindberg (Figure 1) was one of the most prolific authors at the meeting, either authoring or co-authoring four papers. He has disowned his previous work in favor of a cladistic approach based on DNA.

The auction, the second of the three social events for the meeting, was held that evening. The auction material consisted of books, papers and shell-related items. The auctioneers were Hans Bertsch and Pablo Penchaszadeh and they were very entertaining in their attempts to get the most money for a rather meager supply of auction material. Wine and soft drinks were available and the audience got into the mood of reckless bidding and some of the items went for outrageous prices. The money raised goes to support student grants and everyone had a very enjoyable evening.

The following day consisted of General Sessions of contributed papers, many of them presented by the large number of students attending the meeting. Eugene V. Coan presented the first paper of the meeting on taxonomy discussing the "Eastern Pacific Species of the Venerid Genus *Cyclinella* (Bivalvia)." His research based on morphology concluded that despite the number of available names, there are only three eastern Pacific species of *Cyclinella*. Other papers of the General Session which were of interest to me were Steven Lonhart's "The Changing Ranges of Eastern Pacific Marine Invertebrates: The Influence of Oceanographic and Anthropogenic Mechanisms" and Audrey Aronowsky's paper, "Phylogenetic Relationships of Moon Snails (Gastropoda: Naticidae)." She used 55 extant taxa (45 naticid, 10 outgroup) and 106 characters to reconstruct a hypothesis of relationship within the family and examine the family's position within the Gastropoda. Results support the placement of *Eunaticina* in Polinicinae rather than in Sininae. Sister group relationships support a pre-Cretaceous origin for Naticidae.

The afternoon of the 11<sup>th</sup> was devoted to a Poster Session. The quality of the posters was excellent. I was particularly impressed by Daniel Geiger's

"ABMAP: Abalone Distribution on the Web." You could sit in front of the computer screen and select any part of the world, find out which species occur there, and then get information about them and look at large photographs of those species. An interesting future project was one by José Leal (Figure 2) entitled, Morphological Systematics of the Mactridae (Bivalvia: Mactroidea): a Research Proposal."

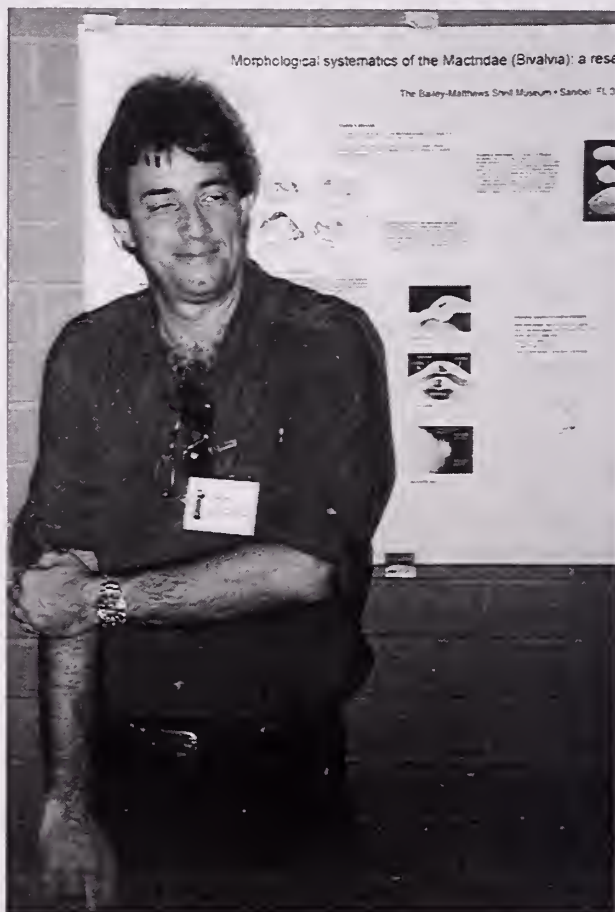


Figure 2. José H. Leal in front of his poster.

The Banquet was held on the evening of the 11<sup>th</sup> at the California Academy of Sciences. It was an outstanding event in a magnificent setting. It started with an hour of hors d'oeuvre and an open bar, and was followed by a marvelous gourmet dinner. The only thing missing was a keynote speaker.

On the last morning, there were field trips to the Monterey Bay Aquarium and to San Bruno Mt. and Pt. Reyes National Seashore.

The next annual meeting of WSM will be held in San Diego, California from 27-30 June 2001.



## BOOK NEWS

*Bivalve Seashells of Western North America**Marine Bivalve Mollusks from Arctic Alaska to Baja California*

by Eugene V. Coan, Paul Valentich Scott and Frank R. Bernard. 2000.

Santa Barbara Museum of Natural History Monographs Number 2.

Studies in Biodiversity Number 2

viii + 754 pages, 124 plates, numerous text figures.

Price: \$99 plus tax and handling [\$12 US; \$17 international]

Order form available at: <http://www.sbnature.org.atlas/bivbook.htm>

A comprehensive monograph on the Pacific coast bivalve fauna has been needed for a long time, and so it is a real pleasure to have *Bivalve Seashells...* in hand. This massive volume has been in the works since 1965, begun by Frank R. Bernard, and completed by Eugene V. Coan and Paul Valentich Scott. I have been privileged to see and comment on draft sections, starting in the mid-1980s (as I am sure have many of the readers of *The Festivus*). The authors have incorporated contributions from well-known worldwide experts, for example, R.G.B. Reid for Solemyoidea, A.I. Kafanov, J-M Poutiers, and J.A. Schneider for Cardiidae.

The authors' purposes, stated in the introduction, are "(1) to aid in the identification of northeastern Pacific bivalves, (2) to provide access to the published information about these species, and (3) to pose questions we feel require additional study." The book succeeds superbly in all three.

A brief history of the scientific study of Pacific coast mollusks puts this work into historical perspective. "It is difficult to understand why a region so long studied by numerous prominent workers, and which attracted so many students, and collectors, should lack a comprehensive monograph of the marine molluscan fauna." The introduction continues with a laundry list of problems awaiting further research. Well-written sections on biogeography, nomenclature, origin, and techniques for the study of Bivalvia follow. The thorough and well illustrated presentation of bivalve anatomy leads logically to sections on life habits and classification. All these sections are highly recommended reading. Glen Jameson, of the Pacific Biological Station in Nanaimo, contributed an interesting section on clam fisheries, toxicity, and habitat disturbance, all clam-human interactions.

The heart of the book, a comprehensive scholarly identification guide to northwestern Pacific bivalves,

begins with an artificial key to bivalve superfamilies. While I haven't had occasion to use the key, it is designed to present novice users with clear choices, and the hinges, muscle scars, ribs, and striae of bivalve shells are illustrated within the key, where they're needed.

In the systematic section that follows, subclasses and superfamilies higher taxa are arranged in a familiar order, reflecting the current state of inferred phylogenetic relationships. Dichotomous keys lead the user to family or genus. Character tables present a comparison of species within a subfamily, and (with my limited testing) work well. Characteristics that delineate class, superfamily, family, and genus are described succinctly. A list of the relevant literature concludes the description of each taxon. For most genera, there is an illustration of "soft part" anatomy: placement of muscles, gills and siphons. Each species merits a superb photograph. I was very pleased with the clarity of these illustrations. Texture, hinge structure, and muscle scars are well-lighted, so that the pictures are quite unambiguous.

The book is comprehensive, Beaufort Sea Atlantic-Arctic species that barely make it into the northeastern Pacific fauna, (*Bathyarca glacialis*; *Boreacola maltzani*) as well as west Pacific species whose North American distribution extends only as far as the eastern Aleutians (*Chlamys albida*; *Astarte vernicosa*) are included. My colleagues working at the other extreme should surely find similar examples. Intriguing deep water species are also given their due -- delicate pristiglomids, glass scallops, verticordiids and poromyids. Three new species, *Adontorhina lynnae*, *Tellina cadieni*, and *Tresus allomyax* are described here. The authors have been thorough in their scholarship to find more appropriate names for

some familiar species: *Macoma golikovi*, *Mendicula ferruginosa*, for example.

The volume concludes with a thorough Guide to Literature: well-selected regional works, the relevant publications on bivalve anatomy, classification, growth and form, genetics, reproduction and larval growth, ecology and biogeography. The Literature Cited section is massive.

There is much to be learned about these fascinating animals. In the introduction and throughout the text, questions are posed to malacologists. Unmentioned, but also deserving our attention are the several species designated "sp. A" and a number of genera for which an illustration of internal anatomy is lacking.

The book's format is most attractive. Marie Murphy and Patricia Sadeghian deserve praise for the book's design and images. In a work this massive some errors are probably inevitable: there are a few seeming inconsistencies in the format (that for the descriptions of the three new species, for example, and errors in geographic place names). This is a large, heavy book, designed to be used. The thick glossy pages will lie flat and open on your work table. The wide margins invite annotation, perhaps to begin to answer the questions the authors pose.

Nora Foster  
2998 Gold Hill Road  
Fairbanks 99709, Alaska

### In Memoriam

Bertram (Bert) C. Draper  
April 30, 1904 - August 7, 2000

It is with sadness that we report the passing, at 96 years, of Bert Draper. Bert was active in malacology for many years and a longtime member of the San Diego Shell Club among other malacological societies. Those of us who knew him remember his beautiful, labeled displays of micro-mollusks, his wonderful micro-photography and his presentations on different groups of tiny mollusks at national malacological meetings. His papers appeared in publications such as *The Veliger* and *The Tabulata*. *The Festivus* was the fortunate recipient of seven of his articles on minute shells [see below]. Bert had an enthusiastic and friendly nature and will be missed by all who knew him.

- 1971. Minute shells. 2(5): 1-4.
- 1972. Check list of shells found in scrapings from *Spondylus princeps* taken at a depth of 40 feet, southeast of Santa Rosalia, Baja California, 1969. 3(4): 5-7.
- 1975. Checklist of shells collected at Cholla Bay, Sonora, Mexico. 6(11): 67.
- 1982a. Observations of living *Caecum crebricinctum*. 14(2): 29-32, figs. 1-8.
- 1982b. Notes on *Turveria encopendema*, a parasite on sand dollars. 14(11): 129-131, figs. 1-7.
- 1985. Mollusks which truncate their shells and how they plug the openings. 17(1): 3-9, figs. 1-19.
- 1986. The family Barleeidae in the eastern Pacific according to the "Review of the Genera of the Barleeidae..." by W. F. Ponder (1983). 18(2): 16-18.





# THE FESTIVUS

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Meeting date: third Thursday, 7:30 PM,  
Room 104, Casa Del Prado, Balboa Park, San Diego

## PROGRAM

### WRITING AND PUBLISHING YOUR OWN SHELL BOOK?

Paul Valentich Scott, of the Santa Barbara Museum of Natural History and coauthor of the new bivalve book, will give the program. It will be in a workshop format with folks thinking about shell books THEY have dreamed of publishing, and bringing the ideas to the meeting. Paul adds, "Also, of

course, anyone is welcome to bring NE Pacific bivalves and I will be happy to help with identification. This would include going through the superfamily key and family character tables for those that want to learn." He is also very willing to sign any of his books which members have purchased.

Meeting date: October 19, 2000

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## CLUB NEWS

### The Club's Annual Christmas Dinner Party

The Club Christmas Party will be held on Saturday evening December 2<sup>nd</sup> in the Crystal Room of the Admiral Kidd Club with festivities beginning at 6:00 p.m. A map to the Club will be in the November issue.

On the menu there are three choices of entree: Prime Rib of Beef (English Cut au jus), Chicken Kiev (boneless breast of chicken filled with herb-flavored butter) or Broiled Halibut (steak basted with lemon butter sauce). These are all served with tossed green salad, bread and butter, vegetable, and coffee and/or tea. Dessert choices are: Old fashioned Cherry Cobbler or New York Style Cheesecake.

The cost of the dinner including gratuity is \$21.00. Further details including information on the shell gift exchange and map will be in the November issue.

Save the date. This is always a very special event!

### Changes to the Roster

#### New Member

Forner, Monika M., 575 Otay Lakes #32, Chula Vista, CA 91913. 619-397-0970.

#### Changes of Address

Underwood, Doris K, 698 Sheridan Woods Dr., West

Melbourne, FL 32904.

King, Robert L., 2635 2<sup>nd</sup> Ave., #205, San Diego, CA 92103-6555.

### The September Party

"Munchie Madness," held at the home of Marty and Terry Arnold on Saturday evening the 16<sup>th</sup>, was a lovely affair. The Arnold's garden was pleasantly cool and the friendships decidedly warm. The munchies were delicious and plentiful as always, and the conversations most enjoyable. All who attended had a very good time.

Our thanks to Marty and Terry for hosting this event once again.

### A Change in Some Subscription Rates

As a result of postal increases for overseas surface mail, *The Festivus* is forced to increase the membership/subscription rate for overseas surface mail subscribers from \$18 to \$20 beginning in 2001. All other membership rates will remain the same. See front page for other membership information.

All memberships received after October 1 will be applied to the year 2001.

## REPORT OF COA 2000

Without question, the COA Convention for the year 2000 held in Houston Texas at the Green's Point Wyndham Hotel was a resounding success. Hosting the annual convention is no small matter, but the volunteers who organized and ran the show this year made it look easy. They not only put on a great convention, they proved that Texas hospitality is no myth. Along with a full slate of programs, field trips and silent auctions (which ran continuously throughout the week), there still seemed to be plenty of time for shell talk with friends old and new. If that wasn't enough, the voice auction alone brought in the greatest dollar amount for any single event in COA history, an astounding

\$22,000.

At the COA club rep. meeting, the main topic of discussion once again was the problem of shrinking membership numbers among the various clubs. The number one reason returned on surveys about this problem was that members (past and present) felt too much time was devoted to "official club business." In short, they wanted less time devoted to organizational matters during regular meetings and more time to simply discuss their favorite subject - shells - with other members, which is why most members join shell clubs. Failure to respond to this is resulting in the continuing decline in membership of many clubs nationwide.

Kim C. Hutsell



## ALGAE IN SHELLS OF *PODODESMUS MACROCHISMA* (DESHAYES, 1839)

ROLAND C. ANDERSON

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The green false-jingle, *Pododesmus macrochisma* (Deshayes, 1839), is one of what I feel are neglected mollusks, animals that are common but have been little studied in recent years, especially as to their natural history. I like to look at things that are uncommon, or that few other people are working with. Since we have numerous *P. macrochisma* growing in the tanks, pipes and filters of the Seattle Aquarium, and since they are also common in my local waters of Puget Sound, Washington State, USA, I took a look at what had previously been done with the jingle shell to see if there was something interesting about it that hadn't been investigated yet.

There are only a couple of major works in the literature on *Pododesmus macrochisma*. Numerous authors have discussed the nomenclature of these shells, and a good summary is found in Chace (1972). He presents a compelling argument for considering all West Coast animals to be one genus and species - *Pododesmus Philippi* 1839, type species *Monia macrochisma* Deshayes 1839. Carpenter (1872) mistakenly changed the spelling to *macroschisma*. Modern taxonomists (e.g. Coan, *et al.*, 2000) have gone back to the original spelling.

Kellogg (1915) published a work on the ciliary mechanisms of bivalves. He found the distortion of the soft body parts of *P. macrochisma* interesting. He ascribed said asymmetry to the arrangement of the byssus in the lower (right) shell, the animal's habit of conforming to the surface it adheres to, and its severe left-right compression. The lower shell grows around the byssus and meets to form a teardrop-shaped hole through which the byssus attaches to a firm surface. He said of its ciliary mechanism "in no case has a more furious ciliary action been observed." I know from personal experience that *P. macrochisma* must have an efficient feeding system, since it is able to

survive and thrive handily in the filtered sea water systems at the Seattle Aquarium which strain out particles as small as 10 micrometers (Anderson, 1987). Its "furious ciliary" action may contribute to its feeding under such conditions.

The comprehensive monograph by Yonge (1977) delineated form and evolution in the superfamily Anomiacea. He posited that *Pododesmus* were the most primitive of the superfamily and further described in great detail the shells, their structure, and their probable evolution and internal organs. Carter (1990) summarized the shell microstructure of the family.

Essentially, all other references about *Pododesmus macrochisma* are from shell identification manuals (e.g., Quayle, 1960; Rice, 1973; Abbott, 1974; White, 1976; Foster, 1991; Coan *et al.*, 2000) and such natural history guides as Ricketts & Calvin (1968), MacGinitie & MacGinitie (1968) and Kozloff (1983). Little else of substance has been published on *P. macrochisma*, with the possible exception of Haderlie & Abbott (1980). In addition to a general description of the animal, they state "the green color inside the upper (and sometimes lower) valve is due, at least in part, to minute algae living within the shell." None of the other references mention this alga in the shell nor do the references they cite, so this referral to the algae may be original material. I haven't been able to find any other references to algae in the shells of *P. macrochisma*, nor in any other shells.

Now, aside from its asymmetry and "furious ciliary action," I found this aspect interesting. The idea of algae living in the shell titillated me. What good could come from the alga from living in the shell matrix? Is this an example of symbiosis, commensalism, parasitism, or none of the above? In

other cases, algae live in the tissues of corals, *Tridacna* clams and sea anemones (Zann, 1980). There are even parasitic marine algae, e.g., those that grow in the tissues of sea pens of the Pacific Northwest and eventually kill them (Birkeland, 1968).

I started my investigations by trying to confirm that algae live in the shells. I collected live jingle shells (Figure 1) from two depths (3 m and 30 m) by scuba diving near the Hamma Hamma River on Hood Canal, a branch of Puget Sound, and from the raw sea water filters of the Seattle Aquarium. The jingles



Figure 1. Green false-jingles, *Pododesmus macrochisma*, growing on a rock from 3 m deep water in Hood Canal (Washington State).

from within the filters had lived totally in the dark. The inlet for the filters is 10 m deep at the Aquarium. They have obviously been thriving in the filters (Figure 2). The upper shells were pried off the rocks or filter surface with a knife. Any epibiota was scraped off the shells and they were scrubbed thoroughly with a stiff brush in running sea water, dried and examined. Compared subjectively, I couldn't tell that there was much difference in the color (Plate 1, figure 1).

I then took a shell from the 3 m depth, pulverized it in a mortar and pestle, added the powder to sea water in a beaker, shook and stirred the liquid and looked at a drop of the slurry under a compound microscope. At 1000 power I saw clumped cells along with shards of shell material on the slide. The presumptive algal cells were light green with an



Figure 2. Green false-jingles, sea anemones and barnacles growing in the sea water filters of the Seattle Aquarium.

orange-red dot in the center. They superficially resembled the *Chlorella* that Cooke (1975) found in the tissues of the heart cockle *Clinocardium nuttallii* (Conrad, 1837). I also used a vital stain (rose bengal, which stains living tissue) on the condensate. It caused various other bits and pieces to be stained red but which could not be determined as algal cells.

Harkening back to my high school biology classes, I recalled that green chlorophyll is soluble in alcohol, so I decided to see if there was a comparative difference spectrophotometrically that I could detect between the shell samples from the three depths. The shells ( $N = 10$  each) were individually pulverized, and 1 g of the shell material was added to 25 ml of a 70% solution of ethyl alcohol. The samples were stirred and allowed to sit overnight. The green color was not all leached out by the alcohol; this corroborates that the green may be partly due to color in the nacre. The next day, the absorbance of each sample was read with a spectrophotometer at 500 and 600 nanometers (nm); "green" as we see it is 550 nm.

There was a considerable difference between the 3 m samples and the others (Table 1). The difference was significant at the 500 nm frequency ( $F_{1,18}=4.49$ ,  $p<0.046$ ), but not at the 600 nm level ( $F_{1,18}=3.30$ ,  $p<0.083$ ), using multivariate analysis of the variance (Sigma Soft<sup>®</sup> software, version 3.5, 1995).

What does this tell us? First of all, it tells us that algae in the shell are growing in the shallow water



layers and not the deeper. This may seem rather obvious, but there are algae that can live in deeper waters. Many filter feeders can live on phytoplankton well below the photic zone, including *P. macrochisma* itself. We don't know precisely what *P. macrochisma* eats, but presumably it eats plankton and suspended matter like other bivalves (Morton, 1967).

It also tells us that algae once in the shell probably continue to grow rather than constantly being added to the shell. We can know this because of the difference between the shallow-water shells and the shells from the filters. The filter jingles were growing in the dark, but still were exposed to the unfiltered, well-mixed surface waters of Puget Sound, presumably containing algal cells. Therefore, there was an opportunity for the alga to be added to the shell, but presumably they were not surviving due to the dark conditions.

The fact that *P. macrochisma* lives down to at least 35 m deep (Quayle, 1960) means it is eating something other than surface plankton. This is corroborated by the jingles that are growing in the tanks supplied by the filtered sea water at the Seattle Aquarium. Our sand filters are designed to filter particulate matter as small as 10 micrometers. There are certainly nanoplankton smaller than this (Smith, 1977), and these may be what *P. macrochisma* collects and eats with its "furious ciliary action."

I'm afraid these elementary observations raise more questions than they answer. If *Pododesmus* are the most primitive of the Anomiidae as Yonge (1977) suggests, does that mean they have been around the longest unchanged, and hence would have the greatest possibility of evolution working on it or its commensals? What does *P. macrochisma* actually eat? What is the identity of the alga living in the shell? Does the jingle actively or passively incorporate the alga into its shell, is it accidental, or does the alga actively seek out the shell to settle in? How is the alga incorporated into the shell matrix? How does the alga reproduce? Who benefits from this relationship? I don't know - maybe the alga benefits by not being eaten by the jingle or other filter feeders. I hope these questions might stimulate further research on this "neglected mollusk."

#### ACKNOWLEDGMENTS

Paul Valentich Scott, Alan Kohn, and Eugene Coan provided thoughtful comments on this project.

Shawn Larson performed the statistical analyses, Katherine A. Krogslund completed the spectrophotometric analyses and Leo Shaw took the photographs. I thank the Seattle Aquarium for allowing me to carry out these investigations.

#### LITERATURE CITED

- ABBOTT, R.T.  
1974. American Seashells. Van Nostrand Reinhold (N.Y.). 603 pp.
- ANDERSON, R.C.  
1987. Marine biofouling at the Seattle Aquarium. AAZPA 1987 Annual Proceedings. pp. 253-257.
- BIRKELAND C.  
1968. Reciprocal interactions between a single prey species, *Pyrosarcus gurneyi*, and its complex of predators. MS Thesis, University of Washington (Seattle, WA). 68 pp.
- CARPENTER, P.P.  
1872. The mollusks of western North America. Smithsonian Institution Miscellaneous Collections 10(252): 325+13+121.
- CARTER, J.G. (ed.).  
1990. Skeletal Biomineralization: Patterns, Processes and Evolutionary Trends. Van Nostrand Reinhold (NY). 832 pp.
- CHACE, E.P.  
1972. *Pododesmus* complex on the west coast. The Tabulata. 5(2): 3-10.
- COAN, E.V., P. VALENTICH SCOTT & F.R. BERNARD  
2000. Bivalve Seashells of Western North America. Santa Barbara Museum of Natural History (Santa Barbara, CA). 764 pp.
- COOKE, W.J.  
1975. The occurrence of an endozoic green alga in the marine mollusc, *Clinocardium nuttallii* (Conrad, 1837). Phycologia. 14(1): 35-39.
- FOSTER, N.R.  
1991. Intertidal Bivalves; a Guide to the Common Marine Bivalves of Alaska. University of Alaska Press (Fairbanks, AK). 152 pp.
- HADERLIE, E.C. & D.P. ABBOTT.  
1980. Bivalvia: the clams and allies. In: Morris, R.H., D.P. Abbott & E.C. Haderlie. Intertidal Invertebrates of California. Stanford University Press (Stanford, CA). 690 pp.
- KELLOGG, J.L.  
1915. Ciliary mechanisms of lamellibranchs. Journal of Morphology. 26: 625-701.
- KOZLOFF, E.N.  
1983. Seashore Life of the Pacific Northwest; an Illustrated Guide to Northern California, Oregon, Washington and British Columbia. University of Washington Press (Seattle, WA). 370 pp.
- MacGINITIE, G.E. & N. MacGINITIE.  
1968. Natural History of Marine animals. McGraw Hill (NY). 523 pp.
- MORTON, J.E.  
1967. Molluscs. Hutchinson and Co. (London). 244 pp.
- QUAYLE, D.B.

1960. The Intertidal Bivalves of British Columbia. British Columbia Provincial Museum (Victoria, B.C.). 104 pp.
- RICE, T.  
1973. Marine Shells of the Pacific Coast. Erco, Inc. (Tacoma, WA). 102 pp.
- RICKETTS, E.F. & J. CALVIN.  
1968. Between Pacific Tides. Stanford University Press (Stanford, CA). 614 pp.
- SMITH, D.L.  
1977. A Guide to Marine Coastal Plankton and Marine Invertebrate Larvae. Kendall/Hunt Publ. (Iowa). 161 pp.
- WHITE, J.S.  
1976. Seashells of the Pacific Northwest. Binfort and Mort (Portland, OR). 127 pp.
- YONGE, C.M.  
1977. Form and evolution in the Anomiacea (Mollusca: Bivalvia) - *Pododesmus*, *Anomia*, *Patro*, *Enigmonia* (Anomiidae); *Placunanomia*, *Placuna* (Placunidae Fam. Nov.). Royal Society of London, Philosophical Transactions B276(950): 453-523.
- ZANN, L.P.  
1980. Living Together in the Sea. T.F.H. Publ. (N.J.). 416 pp.

TABLE 1

MEAN ABSORBANCE (+/- 0.005 absorbance units) OF THE SHELL/ALCOHOL  
SOLUTION (N = 10 each)

Depth	500 nm	600 nm
3 m	0.0484	0.0305
30 m	0.0269	0.0196
Aquarium filters	0.0263	0.0198

Note: the color "green" as we see it is 550 nm



# THE HABITAT OF *PLESIOTHYREUS OSCULANS* (C. B. ADAMS, 1852) (GASTROPODA: PHENACOLEPADIDAE)

CAROL SKOGLUND<sup>1</sup>

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C. B. Adams named *Crepidula osculans* from a single specimen from an unknown habitat in Panamá. The limpet-like shell was placed in the new genus *Phenacolepas* by Pilsbry, 1891, who noted that the term *Phenacolepas* means "a deceptive limpet". Synonyms are *Plesiothyreus cancellata* (Pease, 1860), and *P. tenuisculpta* (Thiele, 1909) (Christiaens, 1988).

In his monograph on the Phenacolepadidae, Christiaens (1989), synonymized the genus *Phenacolepas* with *Plesiothyreus* Cossmann, 1888, and figured the radula. He comments that phenacolepid specimens are rarely found alive, and that he does not know if some Phenacolepadidae are parasites as are some Capulidae.

Little has been written on the habitat of *Plesiothyreus osculans* (C. B. Adams, 1852). The pinkish-red animals, which can be seen through the shells have tentacles almost as long as their shells (Plate 1, figure 2). They live in small colonies attached to the undersides of smooth, clean appearing rocks. These rocks are deeply bedded in a mixture of gravel and sand in the intertidal areas where the receding tide leaves a small stream of water as it ebbs. Animals from Bahía la Cholla and Puerto Lobos, Sonora, and San Felipe, Baja California, México, all seem to prefer this habitat. The fragile shell is clear and almost transparent. The largest shell in my collection is from Bahía la Cholla, Sonora, México, and measures 7.4 mm in length.

Keen (1971) gives the distribution of *P. osculans* as from the northern end of the Golfo de California,

México, to Panamá. This distribution was extended south to Manabí Province, Ecuador (Shasky, 1984), and includes Hawaii, Fiji, Hong Kong, Cook Islands, Réunion, and the Red Sea (Christiaens, 1988). Live animals were taken in the Islas Las Perlas, Panamá (Skoglund & Koch, 1993).

The photo was taken by the late Paul Skoglund.

## LITERATURE CITED

ADAMS, CHARLES B.

1852. Catalogue of shells collected at Panama, with notes on synonymy, station, and habitat. *Annals of the Lyceum of Natural History of New York* 5: 229-549.

CHRISTIAENS, JOSEPH

1988. Revision of the *Phenacolepas* of the Red Sea. *Gloria Maris, Belgian Society for Malacology* 27(5-6): 65-82, figs. 1-25.  
1989. The Phenacolepadidae Gastropoda: Neritoidea Part 2. *Gloria Maris, Belgian Society for Malacology* 28(2-3): 17-48, figs. 1-42.

KEEN, A. MYRA

1971. Sea Shells of Tropical West America: Marine Mollusks from Baja California to Peru. Stanford University Press, i-xiv + 1064 pp., ca. 4000 figs.

PILSBRY, HENRY A.

1891. On the use of the generic name *Scutellina*. *The Nautilus* 5(8): 88-89.

SHASKY, DONALD R.

1984. A preliminary checklist of marine mollusks from Manabí Province, Ecuador. *The Western Society of Malacologists Annual Report* [for 1983] 16: 25-32.

SKOGLUND, CAROL & ROBERT KOCH

1993. New distributional information for Panamic Province Archaeogastropoda (Mollusca). *The Festivus* 25(11): 116-118.

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## TWO JUVENILE *SPONDYLUS* SPECIES IN THE GOLFO DE CALIFORNIA, MÉXICO

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Two of the most aesthetically pleasing species of *Spondylus* in the Golfo de California are *Spondylus princeps* (Broderip, 1833) and *S. calcifer* (Carpenter, 1857). Unfortunately, even the meticulously cleaned adult specimens of these two species show the scars of predation and erosion from encrusting organisms. Normally, spines and surface sculpture on the early portions of the valves are completely absent on adult specimens. Longer spines, too, suffer damage from attempted predation by fish, octopus and rays, or as a result of careless handling during and after collection. Few specimens of either species make it into the collector's cabinet in pristine condition. The most spectacular display of *S. princeps* and *S. calcifer* can be

seen only in carefully collected juvenile specimens such as the specimens shown here in Plate 1, figures 3-6.

*Spondylus princeps* is found from Isla Cedros, on the Pacific coast of Baja California, Bahía de Los Angeles on the Baja side of the Golfo de California and at Isla San Pedro Nolasco, on the mainland side of the Golfo de California south to Isla La Plata, Ecuador. *Spondylus calcifer* ranges from the upper Golfo de California at Puerto Lobos to Perú.

For further information on these remarkable bivalves, see "The genus *Spondylus* (Bivalvia: Spondylidae) of the Panamic Province" by Skoglund & Mulliner (1996) [*The Festivus* 28(9): 93-107, 4 color plates].

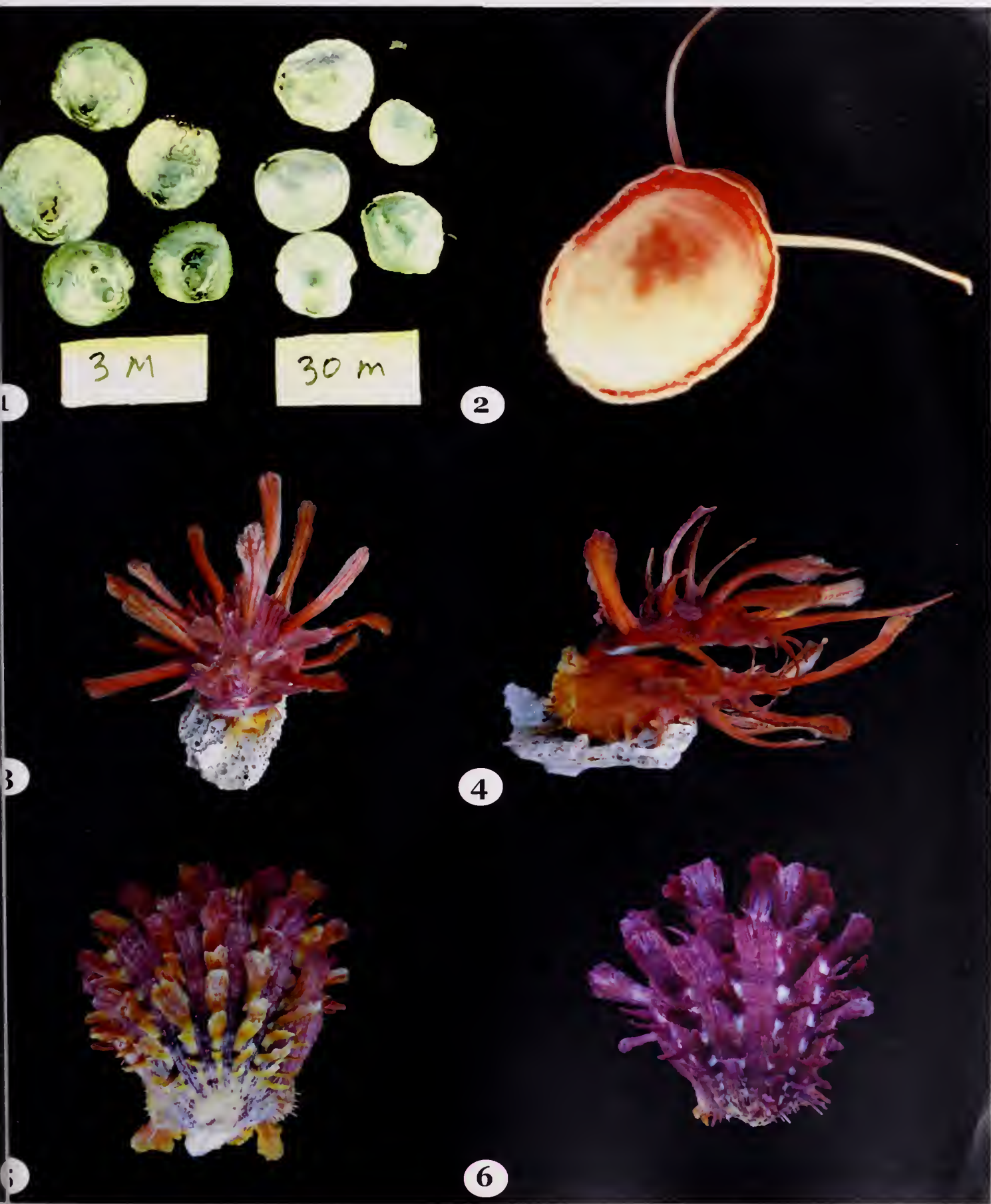
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<sup>1</sup>Mailing address: 5804 Lauretta St., #2, San Diego, CA 92110-1670, USA.

### FIGURE LEGEND

Plate 1, figures 1-6. Figure 1. *Pododesmus macrochisma*, a random assortment of the top shells of the green false-jingle from 3 m deep and 30 m deep showing their green color, some of which is due to algae in the shells. Photo: Leo Shaw, Seattle Aquarium. Figure 2. *Plesiothyreus osculans*, 7 mm, Bahía la Cholla, Sonora, México. Photo: Paul Skoglund. Figures 3, 4. *Spondylus princeps*, 32.2 mm juvenile, taken in 40 m on rock rubble off Isla Danzante, Golfo de California. Figure 5. *Spondylus calcifer*, 41.5 mm juvenile, taken in 10 m on coralline algae rubble in Bahía Concepción, Golfo de California. Figure 6. *S. calcifer*, 37.5 mm juvenile, taken in 10 m on coralline algae rubble in Bahía Concepción. Photos 3-6: taken by Linda Hutsell with a Sony Mavica 88 digital camera.





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Meeting date: third Thursday, 7:30 PM,  
Room 104, Casa Del Prado, Balboa Park, San Diego

## PROGRAM

### Abalone in Time and Space

Daniel Geiger, of the Los Angeles County Museum  
of Natural History, will give a presentation on the bio-

geography, fossil record and placement of Haliotidae in  
Vetigastropoda. His talk will be accompanied by slides.

### Election of Officers

Meeting date: November 16, 2000

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## CLUB NEWS

### Minutes of the San Diego Shell Club Meeting - October 19, 2000

The meeting was called to order at 7:40 P.M. by Vice President Kim Hutsell. After introduction of guests there was a brief business meeting during which the slate of officers for 2001 was presented. They are as follows: President, Kim Hutsell; Vice President, Jules Hertz, Recording Secretary, Silvana Vollero; Corresponding Secretary, Monika Forner; Treasurer, Linda Hutsell. Nominations from the floor and election of officers will take place at the November meeting.

Kim then introduced the speaker for the evening, Paul Valentich Scott of the Santa Barbara Museum of Natural History. Chairs were set up in an informal discussion circle and Paul gave insights on the many kinds of books and the ins and outs of writing one based on his experiences. Members asked many questions and also contributed their ideas. John Jackson, who is a publisher, gave additional insights into the processes of preparing color plates. It was an interesting exchange of ideas.

The shell drawing was won by Joanne Romer and the delicious refreshments were provided by President Mike Mason, who had to work but dashed in to bring the goodies. Following the meeting there was time to

enjoy the beautiful shell displays by Mark Scott and guest Mark Kirwin as well as the sweets.

### The Club's Annual Christmas Dinner Party

The Club Christmas Party will be held on Saturday evening December 2<sup>nd</sup> in the Crystal Room of the Admiral Kidd Club with festivities beginning at 6:00 p.m. and dinner at 7:00 p.m. A map to the Club is on the last page of this issue.

There are three choices of entree: Prime Rib of Beef (English Cut au jus), Chicken Kiev (boneless breast of chicken with herb-flavored butter) or Broiled Halibut (steak with lemon butter sauce). All are served with tossed green salad, bread and butter, vegetable, coffee and/or tea. Dessert choices are: Old fashioned Cherry Cobbler or New York Style Cheesecake.

The cost of the dinner including gratuity is \$21.00. Reservations with check and listing of choice of entree and dessert must be received by November 27<sup>th</sup>.

As is customary, there will be a shell gift exchange. Bring a gift-wrapped shell with only very general locality on the outside (data should be inside) to place under the tree. Only those who bring a gift can participate. Plan to come to the Christmas Party - it is always a very special event!

## FIFTH ANNUAL GATHERING OF SCUM OF SOUTHERN CALIFORNIA (SOUTHERN CALIFORNIA UNIFIED MALACOLOGISTS)

Saturday January 20<sup>th</sup>, Times Mirror Room - 10 AM

Natural History Museum of Los Angeles County, 900 Exposition Blvd., Los Angeles, CA 90007

Hosts: George Davis and Lindsey Groves

SCUM, an informal association of Southern California professional, amateur, and student malacologists and paleontologists, active or interested in molluscan research, meets annually to keep one another informed of research activities and opportunities. There are no dues, no officers, and no publications.

This year's meeting will be at the Natural History Museum of Los Angeles County. All persons interested in Recent and/or fossil mollusks are invited. Informal presentations and discussions covering current research interests are encouraged. (Attendees will have a surprise presentation.) A slide projector and/or overhead projector will be available.

Coffee, tea, and breakfast somethings will be provided. We will break for lunch at noon. The Curator's Cafe (the museum cafeteria) will be open as will other food establishments nearby.

Parking in the Museum's east Lot will be free; mention at the staff entrance that you are with SCUM.

Please phone, FAX, or e-mail your RSVP so we can have enough 'breakfast somethings' on hand. Contact either: George E. Davis, Ph.: 213-763-3450; FAX: 213-746-2999; e-mail: gdavis@nhm.org or Lindsey T. Groves, Ph.: 213-763-3376 (Malacology), 213-744-3485 (Invert. Paleontology); FAX: 213-746-2999; e-mail: lgroves@nhm.org



*RAETA PLICATELLA* (LAMARCK, 1818) (BIVALVIA: MACTRIDAE)  
A FIRST REPORT FROM THE PANAMIC PROVINCE

CAROL SKOGLUND<sup>1</sup>

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The known distribution of *Raeta plicatella* (Lamarck, 1818) has been along the Atlantic coast from North Carolina to Florida, Texas, and from the West Indies to Argentina, in 3 to 6 m (Abbott, 1974). This is the first report of its occurrence within the Panamic Province.

Harry (1969) figured the shell and described the anatomy. He also listed the following species as synonyms of *R. plicatella*: *Lutraria canaliculata* Say, 1822; *Maetra campechensis* Gray, 1825; and *Raeta perspicua* Hutton, 1873.

Three lots of *Raeta plicatella* in the Skoglund Collection came from within a few miles of each other around Bahía Matenchén, Nayarit, México. I found two complete specimens and three valves in the drift at the high tide line at Playa Matenchén in December 1965 (Figure 1). The same area was collected earlier by Iva Barker in 1962. Barker collected a total of 16 valves which she later glued into mismatched pairs. My husband Paul and I dredged on the far side of the bay from Santa Cruz toward Platanitos in both 1978 and 1979. We took nine valves (Figure 2). I also found a single valve far to the north at Puerto Lobos, Cabo Tepoca, Sonora, in 1969. No live specimens were taken.

All of the above shells were in the Skoglund Collection, but some have now been placed in museums. The California Academy of Sciences, San Francisco, has a single valve from the dredged lot (CASIZ 121634) and the Bailey-Matthews Shell Museum, Florida, has two of the Barker mismatched pairs (15001).

In addition, I have seen several lots, collected by old friends, that are now at the Santa Barbara Museum

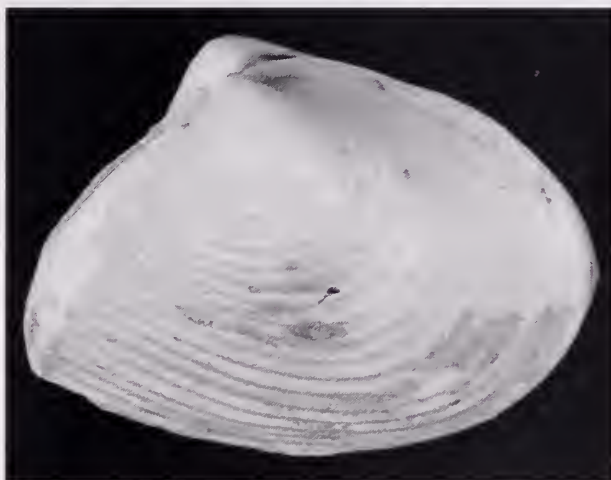


Figure 1. *Raeta plicatella*, specimen 32.5 mm maximum length, Playa Matenchén, Nayarit, México. Photo: D.K. Mulliner.

of Natural History, Santa Barbara, California: 1 pair from the Margaret Cunningham Collection trawled by shrimpers near Guaymas, Sonora, México, in 1961 (SBMNH 134765); 20 valves collected by Gertrude and Ervin Wahrenbrock at Playa Novillero, Nayarit, in 1970 (SBMNH 345471); 2 pair collected by Ervin Wahrenbrock at Teacapan, Nayarit, in February, 1967 (SBMNH 134157) and 1 pair collected by Ted Phillips at Ensenada Blanca, San Felipe, Baja California, México, in 1972 (SBMNH 345472). The Phillips specimen was the largest seen, with a length of 67 mm and a height of 50 mm.

There was no other collecting data on any of the museum lots, but from knowing the collectors, I can safely say that all except the Cunningham lot were found by beach combing. Many of us loved the more

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Figure 2. *Raeta plicatella*, interior of 2 valves, dredged in 6-18 m, mud bottom, Santa Cruz to Platanitos, Nayarit, México. Photo: D.K. Mulliner.

than 40 miles of flat beach at Playa Novillero where you could drive safely on the hard sand and find a thick windrow of shells at the high tide line. Teacapan is just across an estuary at the north end of Playa Novillero and shellers, including the Wahrenbrocks, who stayed there would get a local boatman to take them across to

the far north end of Playa Novillero where they would collect.

*Raeta plicatella* occupies a small area in Nayarit, México, from Bahía Matenchén in the south to Playa Novillero in the north. A few scattered lots would seem to bring the species north in the Golfo de California to Puerto Lobos and San Felipe, but I would prefer to wait for more material from the Golfo de California to be certain.

Dr. José Leal of the Bailey-Matthews Shell Museum identified the shells. Paul Valentich Scott loaned material from the Santa Barbara Museum of Natural History. David K. Mulliner took the photographs. My thanks to all of them.

#### LITERATURE CITED

ABBOTT, R. TUCKER

1974. *American Seashells; the Marine Mollusca of the Atlantic and Pacific Coasts of North America*. 2nd ed. Van Nostrand Reinhold, New York, 663 pp., 24 pls., numerous text figs.

HARRY, HAROLD, W.

1969. Anatomical notes on the mactrid bivalve *Raeta plicatella* Lamarck, 1818, with a review of the genus *Raeta* and related genera. *The Veliger* 12(1): 1-23, figs. 1-20.

### Announcement of a Supplement to Volume 32 of *The Festivus*

*The Festivus* is pleased to announce the upcoming supplement to Volume 32 by Carol Skoglund entitled,

#### *Panamic Province Molluscan Literature: Additions and Changes from 1971 through 2000 I. Bivalvia II. Polyplacophora*

This book of over 140 pages will be released early in 2001 and will be available free of charge to all interested current (2000) member/subscribers. The supplement updates the bivalves and chitons in Keen's (1971) *Sea Shells of Tropical West America* and includes all the information in Skoglund's (1991) *Additions to the Panamic Province Bivalve (Mollusca) Literature 1971 to 1990* and her (1989) *Additions to the Panamic Province Chiton Literature - 1971 through 1988*.



# RANGE EXTENSIONS AND SIZE RECORDS OF BIVALVES FROM THE PANAMIC PROVINCE IN THE NORRID COLLECTION

CHARLOTTE CAREY NORRID

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For the past thirty-five years, my husband Hal and I have traveled around México. We enjoyed meeting the people and learning about their cultural background, we visited the Aztec and Mayan ruins, and most of all we enjoyed camping, swimming, snorkeling, and shelling on the beautiful beaches of the Golfo de California and Baja California.

We have retired from active shelling, so I thought it would be a good time to inventory the shells in our collection. I have completed the list of the bivalves and entered each species found into the computer. Each shell's description and its location were compared to the description found in Keen (1971) and to modifications found in Skoglund (1991). The size of the largest shell from each species was compared to the listings in the *Registry of World Record Size Shells* by Hutsell, Hutsell, & Pisor (1999).

I was delighted to find that we have three range extensions and twelve shells of record size. Several of the size records were for species not listed in the *Registry*, so I imagine if other readers submit the measurements for their shells, some of my records will not stand. The range extensions were to locations in the Golfo de California that were not mentioned in Keen (1971) nor modified by Skoglund (1991).

I want to thank Carol Skoglund for confirming the identification and measurements of the shells and my husband Hal Norrid for pulling up the sometimes very heavy dredge in sometimes very rough seas.

measuring 19.3 mm. Keen (1971) noted that the shell was not common north of San Ignacio, Baja California. Gemmell, Myers & Hertz (1987) list this species in the San Felipe, Baja California area. This brings the range across the Golfo de California from San Felipe to El Golfo.

- 414 *Pitar frizzelli* Hertlein & Strong, 1948, valves found off Isla Danzante, Golfo de California, dredged in 45-75 m in 1991, and dredged in 60-90 m at Isla Smith, Bahía de los Angeles, Baja California in 1993. Nine valves collected, largest 43 x 33.2 mm. Keen (1971) noted only a few specimens had been dredged off the southern end of the Golfo de California. F. and L. Poorman (1988) extended the distribution north to Bahía San Carlos, Sonora. This extends the range across the Golfo de California to Baja California.

- *Solamen megas* (Dall, 1897), two valves, the larger 30 mm, dredged in 60-90 m off Isla Danzante, Golfo de California, in 1991. Distribution from Santa Barbara Islands, California, into the Golfo de California and south to Panamá. Size given as 26 mm. This species has long been confused with *Crenella columbiana* Dall, 1903 (Coan, Valentich Scott & Bernard, 2000). This is both a range extension and a size record.

## RANGE EXTENSIONS

### Keen no. Species and Remarks

- 295 *Diplodonta cornea* (Reeve, 1850), six valves found at El Golfo, Sonora, in 1974, largest

## SIZE RECORDS

- 9 *Ennucula columbiana* (Dall, 1908), a 9 mm valve was dredged in 100 m off Isla Danzante, Golfo de California, in 1995. Previous published

- size, 4.5 mm (Keen, 1971). Bernard (1983) lists the holotype at 6 mm.
- 271 *Here excavata* (Carpenter, 1857), a 20.7 mm valve, dredged in 60-90 m off Isla Smith, Bahía de los Angeles, Baja California, in 1993. Keen (1971) lists an immature shell at 10 mm.
- 350 *Chama sordida* Broderip, 1835, cluster of valves, largest 45 mm, dredged in 60-90 m off Isla Danzante, Golfo de California, after 1980. Length listed in Keen (1971) is 37 mm.
- 403 *Pitar perfragilis* (Pilsbry & Lowe, 1932), 3 valves, largest 13 mm, dredged in 150 m off Isla Smith, Bahía de los Angeles, Baja California in 1992. Draper (1972) lists the size as 11.4 mm.
- 460 *Lirophora mariae* (Orbigny, 1846), group of valves, largest 29.5 mm, dredged in 100 m off Isla Danzante, Golfo de California, after 1980. Keen (1971) gives size as 23 mm.
- 503 *Mulinia coloradoensis* Dall, 1894, several valves, largest 70 x 49 mm, found in Teacapan, Sinaloa, in 1981. Size given in Draper (1987) is 63.4 mm.
- 509 *Tellina carpenteri* Dall, 1900, several valves, largest 27.6 mm, dredged in 125 m off Isla Danzante, Golfo de California, in 1991. Keen (1971) lists size as 25 mm. Hutsell, Hutsell & Pisor erroneously list a 49.5 mm shell. That shell was misidentified (Skoglund, pers. comm., August 2000).
- 517 *Tellina meropsis* Dall, 1900, several valves, largest 19.2 mm, dredged in 50 m off Isla Danzante, Golfo de California, in 1994. Draper (1987) lists size as 15.1 mm.
- 529 *Tellina inaequistriata* Donovan, 1802, several pairs of valves, largest 24 mm, dredged in 60-90 m off Isla Danzante, Golfo de California, after 1980. Keen (1971) lists size as 23 mm.
- 546 *Tellina pristiphora* Dall, 1900, many valves, largest 41 mm, dredged in 100 m off Isla Danzante, Golfo de California, in 1991. Keen (1971) lists size as 36 mm.
- 552 *Tellina zacae* Hertlein & Strong, 1949, largest valve 44 x 22 mm, dredged in 60-90 m off Isla Danzante, Golfo de California, in 1992. Keen (1971) lists size as 33 x 15 mm.

## LITERATURE CITED

## BERNARD, FRANK R.

1983. Catalogue of the living Bivalvia of the eastern Pacific Ocean: Bering Strait to Cape Horn. Canadian Special Publication of Fisheries and Aquatic Sciences 61: 1-102.

## COAN, EUGENE V., PAUL VALENTICH SCOTT AND FRANK R. BERNARD

2000. Bivalve Seashells of Western North America, Marine Bivalve Mollusks from Arctic Alaska to Baja California. Santa Barbara Museum of Natural History Monographs No. 2. Studies in Biodiversity No. 2., 764 pp., 124 pls.

## DRAPER, BERTRAM C.

1972. Check list of shells found in scrapings from *Spondylus princeps* taken at a depth of 40 feet, southeast of Santa Rosalia, Baja California, 1969. The Festivus 3(4): 5-7.
1987. Lost Operculum Club list of champions. Conchological Club of Southern California: 1-43 pp.

## GEMMELL, JOYCE, BARBARA W. MYERS &amp; CAROLE M. HERTZ

1987. A faunal study of the bivalves of San Felipe and environs, Gulf of California, from the Gemmell collection (1965 to 1976). The Festivus 18 (Suppl.): 1-72, figs. 1-78.

## HUTSELL, KIM C., LINDA L. HUTSELL &amp; DONALD L. PISOR

1999. Registry of World Record Size Shells, Second Edition, Snail's Pace Productions, San Diego, California, U.S.A.: i-vii + 132 pp.

## KEEN, MYRA

1971. Sea Shells of Tropical West America. Second Edition. Stanford University Press, Stanford, CA. i-xiv + 1064 pp., ca. 4000 figs., 22 color pls.

## POORMAN, FORREST L. &amp; LEROY H. POORMAN

1988. A report of the molluscan species in the San Carlos rectangle, Sonora, Mexico, collected by Forrest L. and Leroy H. Poorman from December 1953 to December 1983. The Festivus 20(6): 47-63, 1 map.

## SKOGLUND, CAROL

1991. Additions to the Panamic Province Bivalve (Mollusca) Literature, 1971 - 1990. The Festivus 22 (Suppl. 2): 1-74.



## A REOCCURRENCE OF *NODIPECTEN SUBNODOSUS* (SOWERBY I, 1835) IN CALIFORNIA

KIM C. HUTSELL<sup>1</sup>

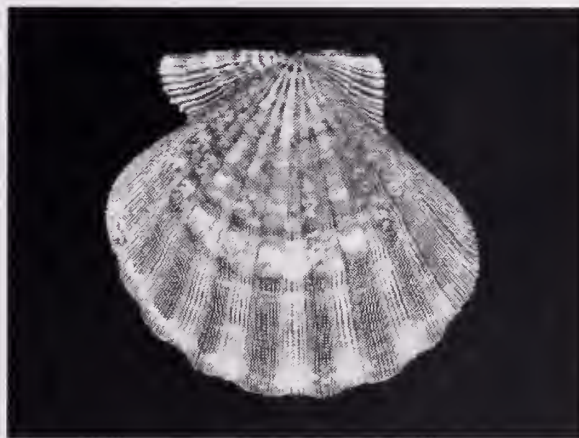
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In July of 2000, Paul Kanner of Los Angeles, California contacted me with information concerning two scallops collected off the California coast. He was certain the species was *Nodipecten subnodosus* (Sowerby I, 1835). Since the northern most range for this species normally doesn't extend beyond the 28<sup>th</sup> parallel on the Pacific coast of Baja California, México, Kanner extended an invitation to examine the shells. A few weeks later, I had the opportunity to visit Paul at his home where he explained the circumstances under which the two specimens were found.

While on a dive trip to San Clemente Island, diver Shanna Holzer collected the paired valves of two dead scallops in an area known as "Little Flower" (approximately 32°50'N, 118°21.8'W). The first specimen was found on June 9<sup>th</sup> and the second on June 10<sup>th</sup>. Both specimens were on sand between rocks at a depth of 17 to 18 m (55-60 ft). Holzer noted that the first specimen was very clean while the second was heavily encrusted, indicating to her that the animals had died at different times. Kanner went on to explain that Holzer was not a shell collector, so she had given one of the specimens to another diver and brought one to him for identification. Paul was kind enough to retrieve the other specimen and make both available to me for examination and photographs. The specimen figured is the second of the two *N. subnodosus* collected by Holzer at San Clemente.

It is infrequent but not unusual that a species sometimes appears outside its normal range. *N. subnodosus*, in fact, once thrived in the coastal waters of what is now Southern Californian. Fossil specimens have been reported from the Cenozoic as far north as

the Channel Islands off Los Angeles, California (J. T. Smith, 1989). Coan & Scott (2000: 242-243, pl. 45) cite a report from California Fish and Game (Strachan *et al.*, 1968) in which *N. subnodosus* occurs as far north as Santa Catalina Island during El Niño years. But the occurrence of Recent *N. subnodosus* in this area is rare. Few collectors are aware that *N. subnodosus* occurs off of Southern California and fewer still have actually seen a recently collected specimen.



*Nodipecten subnodosus*, 111.8 mm H, 119.4 mm W. Photo: Linda Hutsell.

### LITERATURE CITED

- COAN, EUGENE V., PAUL VALENTICH SCOTT & FRANK R. BERNARD  
2000. Bivalve Shells of Western North America. Santa Barbara

<sup>1</sup> Mailing address: 5804 Laurretta Street #2, San Diego, CA 92110, USA.

Museum of Natural History Monographs No. 2, Studies in Biodiversity No. 2, viii + 764 pp., 124 pls.

SMITH, JUDITH TERRY

1991. Cenozoic giant pectinids from California and the Tertiary Caribbean Province: *Lyropecten*, "*Macrochlamys*," *Veripecten*, and *Nodipecten* species. United States,

Department of the Interior, Geological Survey, Professional Paper 1391: 155 pp., 38 pls.

STRACHAN, ALEC R., CHARLES H. TURNER & CHARLES T. MITCHELL

1968. Two fishes and a mollusk, new to California's marine fauna, with comments regarding other anomalous occurrences. California Fish and Game 54(1): 49-57.

## IN MEMORIAM ROBERT KOCH 1923-2000

It is with great sadness that we report the passing on September 29<sup>th</sup> of Robert Koch, longtime Club member, supporter of *The Festivus* and good friend. Bob was an avid student of Panamic gastropods, especially enjoying micromollusks which he carefully sorted and identified under his microscope and arranged in his cabinets as gems in a jewel case. Bob and his wife Wendy took many trips to México, Panamá, Costa Rica and other areas of the Panamic Province hunting the elusive sea shell. It was on one of those trips that Bob discovered an undescribed typhid species which was later described and, at his request, named for Wendy.

One trip to Costa Rica found the Koch, Skoglund and Hertz families together in Playas del Coco in Guanacaste Province. We were in a small, lovely hotel which we had almost to ourselves. We spent the days at the beach shore collecting and dredging, the late afternoons discussing our exciting finds, and the evenings enjoying wonderful meals. It is a precious memory.

Our hearts go out to Wendy and their three sons, Robert, Richard and James.

Bob's beautiful and scientifically valuable collection has been donated to the Santa Barbara Museum of Natural History where it will be available to researchers. His short papers, many with amusing titles, made for enjoyable and informative reading in *The Festivus* during the first half of the 1990s. They are listed below.

- 1990. Panamic puzzles: those terrifying turbonillas. 22(5): 63-70, figs. 1-5 + illustrated key.
- 1991a. A new distribution for *Lepidozona* (*Lepidozona*) *skoglundi* (Ferreira, 1986) (Mollusca: Polyplacophora). 23(3): 25.
- 1991b. A question of size: a note on dwarfing in *Typhisopsis coronatus* and *Typhisala grandis*. 23(5): 39.
- 1991c. Panamic puzzles: a didymous *Terebra petiveriana*? 23(6): 42-44, figs. 1-12.
- 1992a. Panamic puzzles: *Terebra argosyia* and *T. robusta*. 24(1): 3-7, figs. 1-4.
- 1992b. Panamic puzzles: *Oliva kerstitchi* -- yes, no or maybe? 24(3): 31-33, figs. 1-5.
- 1992c. Panamic puzzles: those peripatetic eulimids. 24(9): 97-100, figs. 1-4.
- 1993a. Panamic puzzles: a singular *Cingulina*. 25(4): 39-41, figs. 1-4.
- 1993b. Geographic locations supplementing "Additions to the Panamic Province gastropod (Mollusca) literature - 1971-1992" by Carol Skoglund. 25(7): 60-64.
- 1994. Panamic puzzles; a question of assignment (*Odostomia* vs. *Turbonilla*). 26(5): 53-55, figs. 1-6.
- 1996a. Panamic puzzles: those enigmatic *Alaba*. 27(1): 7-9, figs. 1-5, 1 table.
- 1996b. Panamic puzzles: valid or variant vitrinellids? 27(3): 30-31, figs. 1-4.



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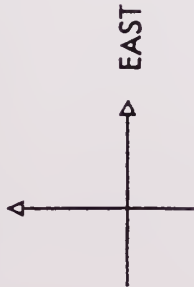


# Admiral Kidd

## CATERING AND CONFERENCE CENTER

San Diego Shell Club Christmas Party  
Saturday evening, December 2<sup>nd</sup>  
Crystal Room, 6:00 P.M.  
Dinner: 7:00 P.M.  
Bring your gift-wrapped shell

NORTH



NIMITZ BLVD

ROSECRANS

HARBOR

DRIVE

DATUM ROAD

ACOUSTIC ROAD



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